ACTION RESEARCH IN BRIDGING THE GAP BETWEEN THEORY AND PRACTICE: A STUDY OF THE EVALUATION AND REPORTING OF STUDENT ACHIEVEMENT

A Dissertation
by
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Submitted to the Graduate School
Appalachian State University
in partial fulfillment of the requirements for the degree of
DOCTOR OF EDUCATION

May 2015
Educational Leadership Doctoral Program
Reich College of Education

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Abstract

ACTION RESEARCH IN BRIDGING THE GAP BETWEEN THEORY AND PRACTICE: A STUDY OF THE EVALUATION AND REPORTING OF STUDENT ACHIEVEMENT

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The theory and practice of evaluating student academic performance has been a source of concern in academia for over a century. The challenge of successfully implementing assessment practices that reflect the true measure of a student's academic achievement, and that accurately and effectively communicate the student's level of mastery to stakeholders, has not been met according to measurement specialists.

Current education reform efforts have placed a heavy emphasis on student and teacher accountability, and the use of high-stakes testing has become a key factor in the efforts. While teachers and students in the classroom are held accountable for the state summative assessments that are aligned to curriculum standards, research shows that teachers do not receive adequate training on how to properly align classroom assessments to the curriculum, or on how to assign a performance grade that accurately articulates

student content mastery (Brookhart, 1994; Guskey, 2004, 2006; Stiggins, 1999; Stiggins & Bridgeford, 1985).

This study was designed to examine the implementation process of research-based classroom assessment practices that both accurately measure the academic achievement of students and effectively communicate the students' level of mastery. Interviews were conducted to examine the practicality of the assessment practices and whether the evidences gathered from these practices support performance grades that accurately articulate student achievement. The study showed that recommendations from measurement specialists are practical assessments for the classroom, accurately measure the academic achievement of students, and effectively communicate the students' level of mastery. However, training in pre-service teacher programs that continue to be supported by in-service professional development is critical to the successful implementation of the recommendations, and to bridging the gap between theory and practice.

Acknowledgments

The journey to earn my Ed.D. is paved with the efforts of many who worked diligently to support and encourage me as I trudged over hills and walked through what appeared to be endless valleys. Without my dissertation committee, coworkers, and my fellow Cohort 18 members, this accomplishment would never have been possible.

I would first like to thank Dr. George Olson. His instruction ignited the passion in me to become a change agent in classroom assessment practices. His advocacy led me to heights I never thought I could attain, and for that I am forever grateful.

I would also like to extend my sincere gratitude to Dr. William Gummerson. His knowledge of school administration and teacher leadership was critical to the process as his advice helped me balance the constraints of the IRB with the demands of my role as principal at the participating school. His guidance kept me focused, professional, and productive, and I owe him a debt of gratitude.

Dr. Charles Duke was also an integral member of my dissertation committee. His guidance and feedback taught me the art of effective communication, an invaluable skill that I will use well beyond the life of my dissertation. His knowledge of the English language was paramount to helping me communicate my passion effectively, and I am forever grateful.

My sincere gratitude goes to the ladies of Cohort 18 for their friendship, guidance and support. I was privileged to have you as classmates, and even more fortunate to consider you as friends. From 18 to infinity, you rock!

Lastly, I thank the faculty and staff of the participating school for their unwavering support throughout this journey. Specifically, I would like to thank those who worked tirelessly to help bridge the gap from theory to practice: Laura, Lesley, Christopher, and Whitney. I consider myself blessed to work with you.

Dedication

This dissertation is dedicated to my amazing family. I am blessed beyond measure.

First, I would like to dedicate this work to my husband, Jim, and my children, Heather, and Heath. They are the light of my life and they made the journey worthwhile. Their understanding, encouragement and support during this process were unconditional. They make me a better person, and I love them with every fiber of my being.

I thank my God-fearing parents, Jane and Deac for the example of love, faith, and commitment they have shown me all my life. I am forever grateful for the work ethic and the stick-to-itiveness they provided me. As Chief Prayer Warrior and Editor-in-Chief, they are the reason I began, and successfully completed this journey. Words cannot express my love, respect, and admiration I have for them.

Last, but certainly not least, I would like to uplift Jesus Christ, my Lord and Savior and creator of this journey. I praise Him for helping me reach the destination, but more importantly for all the lessons I learned along the way. Jeremiah 29:11 (NIV), ‘“For I know the plans I have for you,’” declares the Lord, ‘“plans to prosper you and not to harm you, plans to give you hope and a future.”’

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Chapter 1: Introduction

The concerns generated from inquiries evaluating student achievement and "the statistical and psychological problems underlying the assignment of grades or marks" (Finkelstein, 1913, pg. 7) have endured for a century. In recent years concerns have been fueled by a disparity of opinions within the measurement community about the most effective method of evaluating and reporting students' academic achievement. The research framing the debates such as (a) grade reporting, formative assessment, and standards-based grading (Bailey & Guskey, 2001; Guskey, 1994, 2006; Marzano, 2000; Landrum & Dietz, 2006; Stiggins & Chappuis, 2005, 2006.); (b) the reliability and validity of a grading system (Allen & Lambating, 2001; Nitko, 2004; Olson, 1989; Popham, 2006); and (c) the meaning of grades as a measure of academic achievement (Brookhart, 2011; Cross & Frary, 1999; Heflebower, 2011), has added to the educational community's knowledge, resulting in better strategies for teaching and learning and generating enhanced guidelines and procedures for more improved grading practices. Despite these advances, both the research community and practitioners continue to disagree on classroom assessment practices (Cross, & Frary, 1999; Guskey, 1994, 2006; Marzano, 2000; Randall & Engelhard, 2010).

Historical Background

The marking and grading system currently prevalent in United States' public schools is steeped in tradition dating back to Yale University in 1783 (Durm, 1993;

Landrum & Dietz, 2006). In the early genesis of public education, no standard of measurement served to differentiate students academically. Starting at the collegiate level and eventually followed by the public school system, student differentiation in the classroom was based on social class rather than academic achievement. As C.W. Eliot recounts in his diary, *Harvard Memories*, "In [the] early years of Harvard, students were not arranged alphabetically but were listed according to the social positions of their families" (as cited in Durm, 1993, p. 1). The public school system often differentiated students by seating arrangements or by rank order of class rosters. Thayer (1856), principal of Chauncy-Hall School in Boston, instructed teachers as follows:

> Tell the scholars that, as soon as you shall have become acquainted with them, you intend to establish a 'merit roll,' and that you cherish the hope that all, or with few exceptions, will have a claim to the front rank. (p. 37)

Ezra Stiles, president of Yale College from1788-1795, recorded in his diary in 1785 what appears to be one of the earliest grading systems in the United States (Stiles, 1901). According to the entry, students at the collegiate level were evaluated based on one of four descriptive adjectives: optime, second optime, inferiors, and pejores (Stiles, 1901). In the 1800s primary and secondary schools, like the Boston Monitorial School system followed suit in referencing a marking and grading system by using descriptors to rank the highest performing students in spelling lessons as monitors, followed by the highest class, and rank-ordered down to the lowest class (First Biennial Report, 1826).

Stiles (1901) explained in his diary that each descriptor was assigned a value based on a four-point scale. Yale University broadened the use of the four-point scale in 1813 to calculate grade point averages that ranged from 1.3 to 3.7 (Landrum & Dietz,

2006). By 1830, Harvard was consistently evaluating students using a numerical scale (Durm, 1993). Harvard also appears to have been the first to record a letter grade as an 1883 reference mentions a student earning a "B" (Durm, 1993). Subsequently, in 1897 Mount Holyoke adopted a grading system that combined descriptors (pass and fail), letters (A-F), and percentages (100 point scale) (Durm, 1993).

However, the public school system did not see the need to shift to a standardized reporting format until the turn of the twentieth century. The enactment of compulsory attendance and child labor laws increased the high school student population in the United States from 542,000 students in 1900 to 5,725,000 in 1950, a 956.27% increase over a span of 50 years (Snyder, NCES, 1983). This rise in high school enrollment required teachers to shift to a standardized reporting format, a seemingly more efficient reporting format for large populations. Consequently, high schools shifted their primary marking and grading system to a percentage grading format (Snyder, NCES, 1983).

As early as 1913, concerns over marking and grading systems started to develop. I.E. Finkelstein (1913) began to analyze the theory of marking, generating a list of questions concerning the blind faith on which the reliability of the marking system had been accepted. In his master's thesis entitled *The Marking System in Theory and Practice*, Finkelstein (1913) asked the following questions:

- What should the mark really represent?
- Should the mark be based upon ability or performance, or even upon zeal and enthusiasm?
- What is the best set of symbols to represent ability or achievement?

- How are the marks given by different teachers or different schools actually distributed?
- Is it possible, by exhibition of distributions, or by formal instruction in the theory of marking, to increase the fairness and reliability of marks?
- Do students tend to secure the same standing under different teachers in the same school or to maintain their relative standing when proceeding from class to class or from school to college? (pp. 7-8)

These century old questions stemming from concerns over the grading system are still as prevalent today as they were in the early 1900s. While the current consensus is that student academic performance should be assessed according to a reliable and valid grading system (Cross & Frary, 1999; Randall & Engelhard, 2010), finding a system that bridges the gap between theory and practice has eluded both measurement specialists and practitioners in the field for over a century. While there is general consensus that the system should both support grading practices that measure student achievement and produce performance grades that effectively communicate the student's level of mastery (Nitko, 2004; Popham, 2006), a study by Randall and Engelhard (2010) reported that educators inflate or deflate performance grades based on non-academic factors such as behavior and effort. Since performance grades serve as a means to communicate student achievement to stakeholders, the need for consistency in grading practices is essential.

Teachers say they agree with the measurement community that graded or scored student work should be the only measure of academic achievement (Randall & Engelhard, 2010); however, in practice they admit to considering additional factors such as the meaning, value, relevance, and purpose of the grades when measuring academic

achievement (Allen & Lambating, 2001; Messick, 1989; Pilcher, 1994; Randall & Engelhard, 2010). Teachers receive limited formal training in valid assessment practices, and are often unfamiliar with recommended practices by measurement specialists (Brookhart, 1994; Guskey, 2004, 2006, Stiggins, 1999; Stiggins & Bridgeford, 1985). As a result, teachers may base their assessment practices on personal experience, opinions and unconscious bias (Guskey, 2006).

In this age of accountability measured by high-stakes testing, monitoring students' academic progress in the classroom has become essential. Theoretically, classroom assessment practices, when properly aligned and designed, should produce performance indicators that accurately reflect each student's performance level. When student classroom performance does not align to performance on standardized tests, teachers are called upon to explain the discrepancy. When teachers are adequately trained in how to properly align, design, and grade assessments based on valid measurement standards, they are better equipped to accurately articulate to stakeholders the meaning of a performance grade, communicate how the grade relates to student achievement, and explain any discrepancy in classroom performance and standardized tests performance (Brookhart, 1994; Guskey, 2004, 2006; Stiggins, 1999; Stiggins & Bridgeford, 1985).

Introduction of Researcher

My graduate work spurred a passion in me to affect change in an area that I believed was in need of reform—employing formative assessment to more accurately articulate student achievement (see Epilogue). Therefore, when I became principal I set into motion policies and procedures to affect that change. For instance, the grading scale was converted from a 100 point scale to a 4 point system, a school-wide lesson plan

template was designed and incorporated into the teachers' daily plans, and teachers were provided professional development on how to differentiate instruction and assess achievement that does not incorporate behavior factors in a student's grade. While there were few procedural issues converting the grading scale or incorporating the lesson plan template, the process of creating formative classroom assessments that more accurately articulated academic achievement proved more difficult. I observed many struggles in the classroom with properly aligning, designing, and grading assessments based on valid measurement standards.

When I stepped back to reflect on why some initiatives were more successful in their implementation than others, I concluded that implementing a change in the grading scale and lesson plan format were more manageable tasks because it was a matter of changing one framework to another; however, in talking with the faculty about why they were resistant to incorporating new instructional and assessment practices, the answer seemed to be that their established practices were more personal, framed by experience and personal comfort level. I concluded that tackling an initiative that addresses seemingly personal-professional practices is better done in a small group setting rather than as a school-wide initiative. Therefore, in order to provide an in-depth information-rich study in how to increase the effectiveness of classroom assessment practices so that student achievement is accurately articulated, I elected to use a purposeful sample (Patton, 1990) with four high school teachers who each represented a core academic subject.

Essential Questions

The current study was designed to examine why after 100 years of research and a plethora of documented reports of recommended grading practices by specialists in the field of measurement, teachers persist in assigning grades that are based on unsound assessment practices (Allen & Lambating, 2001; Messick, 1989; Pilcher, 1994; Randall & Engelhard, 2010). Is this because of a lack of training, as suggested by measurement specialists, or is the issue that recommended assessment practices are impractical for the classroom (Brookhart, 1993)? After receiving training in recommended assessment practices, will teachers assign performance grades that are a true measure of academic achievement that accurately and effectively communicate students' level of mastery to stakeholders? Or, will the teachers report the practices too impractical for implementation in the classroom?

Purpose of the Study

The purpose of this study was to examine recommendations by measurement specialists concerning effective methods to evaluate and report students' academic achievement, to test the practicality of these recommendations, and to examine the idea that a lack of teacher training in classroom assessment is a major contributing factor in the disparity between theory and practice (Cross & Frary, 1999; Randall & Engelhard, 2010). The recommendations are well-founded and practical, and the results could help to inform teacher training in classroom assessment practices and their practical implications. Furthermore, by producing evidence in support of sound, practical classroom assessment practices that produce performance grades that more accurately articulate student

achievement, this study could assist in closing the gap between measurement theory and teacher assessment practices.

Significance of the Study

A global economy, increasing economic inequalities among Americans, and a plethora of educational reforms have resulted in a heightened and ever present accountability for both teachers and students that permeates the public school classroom (Baker et al. 2010; Ravitch, 1985, 2010; Spring, 1989;). Federal initiatives such as the No Child Left Behind Act of 2001, the Race to the Top initiative, and its parent program the American Recovery and Reinvestment Act of 2009, have more recently set forth standards that states can opt into and be monetarily compensated for by adhering to certain accountability standards focused on preparing students for college and the job market. Consequently, standardized curriculum and assessments, such as the Common Core, Measurement of Student Learning portfolios, and End of Course tests have been adopted by state school systems to monitor the progress of their schools in order to ensure that school districts are working to meet these program requirements.

Key Terminology

Throughout the last century, a vast array of descriptive words has been used to articulate the academic achievement of students. Ambiguous terminology such as grading system, grading policy, grading practice, marking, scales, scoring, measurement, assessment, achievement, performance and rating have created confusion. Therefore, for clarity, the terms frequently used in this inquiry are defined below.

Academic achievement. The term student academic achievement is a multifaceted construct that refers to student demonstrated attainment of a learning goal (Guskey, 2013b).

Content mastery. Content mastery refers to the level of performance sufficient to denote mastery based on professional judgment (Guskey, 2013b).

Formative assessment. Formative assessment is an assessment method that provides on-going feedback throughout the learning process that guides students in making informed decisions (Brookhart, 2009; McMillan, 2008; Popham, 2008).

Learning target. A learning target is defined as the exact piece of the particular content students are to master (Leahy, Lyon, Thompson, & Wiliam, 2005).

Nonacademic factors. Nonacademic factors are factors that are considered in grading practices that relate to student behaviors, work habits, and attitudes (Brookhart, 2009).

Participating teachers. The four teachers who willingly participated in the study.

Performance grades. To distinguish ambiguous grading system concepts, the marks that teachers assign to represent students' academic achievement will be referred to as performance grades, a common distinction in the literature on educational measurement and classroom assessment.

Scoring. The practices the teacher uses in assigning performance grades will be identified by the term scoring.

Stakeholders. Stakeholders are the students, parent, and teachers.

Summary

The purpose of this study was to examine recommendations by measurement specialists concerning an effective method of evaluating and reporting students' academic achievement. An action research study that includes observations, interviews, and program evaluation was conducted. I wanted to determine whether assessment practices advocated by measurement experts helped teachers effectively communicate students' level of mastery and if the practices were actually feasible for classroom teachers. If these measures are not effective or feasible, why are they not? Interviews were conducted to examine the practicality of the assessment practices and whether evidences gathered from these practices support performance grades that accurately articulate student achievement. The challenge was to assess the practicality of recommended practices when implementing them in the everyday life of the classroom. This study was intended to bridge the gap between measurement theory and teacher assessment practices. The results from this study will inform teacher training and teacher practice in valid classroom assessments that allow teachers to instruct, encourage, and assess students of varying ability levels while maintaining validity according to the recommendations of leading measurement specialists.

Chapter 2: Literature Review

Perhaps the best approach to examining the recommendations of measurement specialists concerning an effective method of evaluating and reporting students' academic achievement is to take an in-depth look at the purpose of performance grades, classroom assessment practices, student performance and academic achievement, and measurement theory recommendations and assessment practices.

Purpose of Performance Grades

This inquiry heeds the warning of Brookhart (2011) not to get sidetracked with the details of a grading system before productively defining the foundation of the system—the primary purpose of performance grades. However, while researchers and teachers tend to agree that the general purpose of grades is to communicate student academic achievement (Guskey, 2004; O'Connor, 2009; Wormeli, 2006), the various opinions concerning the factors that delineate achievement have expanded, ultimately leading to inconsistent assessment practices. For instance, Brookhart (1993) suggests that grades should be a reflection of the student's level of ability in relation to his or her level of academic performance. Conversely, other measurement specialists (Cross & Frary, 1999; Nitko, 2004; Olson, 1989; Popham, 2006; Randall & Engelhard, 2010; Stiggins, 2001; Winger, 2005) contend that performance grades should accurately articulate the level of student academic achievement, and thereby should communicate the student's level of content mastery only. Stanley and Baines (2004) report that a variety of factors

are incorporated into a grading system that stem from a multitude of purposes that grades serve:

- A vehicle used by the teacher to increase a student's self-esteem.
- An opportunity to reward a student's likability.
- A public relations opportunity to help generate positive feelings between a school and the community.
- A chance for the student to garner funds for college. (p. 101)

On the other hand, according to Guskey (2004), teachers see the primary purposes of grades differently:

- To communicate academic achievement to students and parents.
- To motivate students to put forth their best effort.
- To indicate each student's status in the class.
- To convey how well students have achieved standards.
- To reflect whether students are doing their work and following directions.
- To show progress and improvement from the last performance. (p. 32)

The fifth category from Guskey's (2004) list above, "to reflect whether students are doing their work and following directions," incorporates non-academic compliance factors such as effort and behavior into the purpose of grades. While teachers perceive this category as a way to communicate student achievement in terms of achieving better work performance, work habits, accepting responsibility, and improving behavior, these factors are not truly academic and misrepresent academic achievement. Furthermore, to add to this rather comprehensive list, each positive factor associated with the purpose of grades has a negative factor that also may impact grades. For example, while grades may

be used to reward a student's likeability, grades may also be used to penalize a student for behaviors that are not pleasing to the teacher such as class disruptions, lack of effort, or not following directions.

As a measure of a student's level of content mastery, the performance grade should accurately articulate a student's level of academic achievement without being influenced, either positively or negatively, by other non-academic factors. As previously mentioned, academic achievement is a multifaceted construct that refers to a student's demonstrated attainment of a learning goal (Guskey, 2013a). To accurately interpret the meaning of grades, consistent evaluation practices should be employed (Brookhart, 1994). Therefore, a closer look at classroom assessment practices is necessary.

Classroom Assessment Practices

To transform classroom instruction and provide students and teachers with the data necessary to make informed instructional decisions, measurement specialists support informal, formative, and summative classroom assessment practices as a critical way to gather evidence to help improve classroom instruction and increase student learning (Popham, 2008; Stiggins, Arter, Chappuis, & Chappuis, 2004; Stiggins & Chappuis 2005). While teachers' assessment practices of students are subjective in nature, in order to limit subjectivity and better evaluate student mastery of the subject, classroom assessments should be designed in such a way that they are directly aligned to the learning targets. Conducted throughout the lesson before the students are evaluated for a performance grade, informal and formative assessments highlight students' learning proficiencies while revealing deficiencies in understanding the learning target. This process generates an accurate assessment about student learning and provides an

opportunity to address any gaps in academic learning before they negatively impact student academic achievement (Stiggins et al., 2004; Stiggins & Chappuis, 2005).

The learning process is just that, a process–a series of actions or steps taken in order to achieve a particular end. Therefore, teachers should be careful not to end the learning process prematurely by merely assigning a performance grade on student work. Rather, while working within the timeline of the grading period, a teacher should assign a performance grade only after students have reached the desired level of proficiency and can produce evidence to show that they are ready to progress to the next learning target. By providing students with frequent descriptive feedback, the teacher communicates to the students what they can do to improve upon their work, gives them a chance to make corrections, and provides them with the opportunity to resubmit. This practice empowers students to take control of their learning and progressively move through the learning process (Brookhat, 2008, Guskey, 2007). The method of providing frequent descriptive feedback allows the students to experience small but repeated successes in their academic journey, which increases their confidence and motivation to continue on a successful academic path (Guskey, 2007; Stiggins et al., 2004; Stiggins & Chappuis 2005).

Student Performance and Academic Achievement

Measurement specialists link student performance and academic achievement by defining academic achievement as the acquisition of knowledge and skills, evidenced in student performance on classroom assessments such as tests (Pilcher, 1994; Sadler, 2010). Research suggests that teachers measure academic achievement by student performance on graded classroom assignments (Pilcher, 1994; Randall & Engelhard, 2010). In addition, teachers interpret academic achievement to include the acquisition of

knowledge and skills demonstrated by student performance in ability, effort, and behavior (Pilcher, 1994; Randall & Engelhard, 2010). While these factors demonstrate acquisition of behavioral knowledge and skills, they are non-academic factors that do not provide evidence of content mastery.

In support of previous research that performance grades should accurately articulate a student's level of academic achievement (Cross & Frary, 1999; Nitko, 2004; Olson, 1989; Popham, 2006; Randall & Engelhard, 2010; Stiggins, 2001;Winger, 2005), Sadler (2010) states that "determining whether a particular element is a legitimate component of achievement is a classification rather than a measurement issue" (p. 731). Sadler (2010) claims that even though many nonacademic achievement factors, such as effort and attendance, can be argued to have a rational impact on student performance, these are input variables and do not fall within the legitimate definition of academic achievement because they do not demonstrate the attainment of a learning goal.

Even though the issue of teacher practice conflicting with measurement theory has been well documented, teachers persist in basing performance grades on many non-academic factors. A key step to addressing this issue is to explore measurement theory recommendations and teacher assessment practices used to evaluate student achievement.

Measurement Theory Recommendations and Assessment Practices

Because of the variety of purposes that grades serve, the classroom grading practices used in calculating performance grades, and the varied interpretations of the meaning of performance as it relates to academic achievement, performance grades have become an amalgamation of academic and nonacademic factors. Although "grades are important summaries of a student's achievements and are used by students, parents, other

teachers, guidance counselors, school officials, postsecondary educational institutions, and employers" (Nitko, 2004, p. 360), research has shown that teachers participate in assessment practices that call into question the validity of the performance grade (Guskey, 2006; Randall & Engelhard, 2010; Resh, 2009; Stiggins, 1999). Understanding the discrepancy that exists between the recommended grading practices suggested by measurement specialists and the actual grading practices used by teachers is imperative to having an informed discussion focused on connecting recommendations to practice.

Stiggins, Frisbie, and Griswold (1989) investigated the incongruence that exists between measurement theory recommendations and teacher assessment practices. In their study, 19 different recommendations by measurement specialists' were compared to teachers' grading practices. Of the 19 recommendations, 11 were found to be contradictory to teachers' grading practices. Myriad of reasons have been suggested for the gap between theory and practice:

1. Best practice may be a matter of opinion or philosophical position rather than established fact. There may not be a single best approach; rather, circumstances may permit various 'valid' approaches.
2. Recommendations of measurement specialists may fail to take into account some of the practical constraints or realities of life in the classroom. Those making recommendations may be too far removed from the classroom to see the impracticalities of their advice.
3. Teachers may be unaware of the recommendations or may lack the expertise needed to implement it. (p. 11)

The general findings from the study (Stiggins et al., 1989), suggested that while teachers may be "unaware of the recommendations," (p.11) a lack of training to bring about awareness is not enough to explain the incongruity between measurement theory and teaching practice as suggested by Cross and Frary (1999), and Randall and Engelhard (2010). Rather, the gap between theory and practice is largely tied to each individual teacher's personal beliefs and values formed from his or her dual role as advocate and judge.

Brookhart (1993) states that "measurement instruction can be expected to clarify teachers' concepts of the meaning of grades, but there is no reason to expect that measurement instruction will change thinking about values and social consequences" (p. 140). Brookhart (1993) suggests that the student-centered altruistic nature of teachers is more powerful and persuasive than their dual counterpart role in serving as judge. This altruism could possibly explain why teachers incorporate effort as well as achievement into the assessment process as advocacy may have a greater personal influence on teachers than does the validity of interpretability in their assessment practices. Having to fulfill a dual role may require teachers to compromise in their assessment practices.

Practicality. In addition, the issue of the practicality of recommended practice in the classroom needs to be addressed. While the recommendations by measurement specialists may be philosophically compatible with common teacher beliefs (Randall & Engelhard, 2010), the persistent practical demands and structural limitations of the teaching profession require the recommendations to be "occupationally realistic with regard to the constraints within which teachers operate" (Schneider, 2014, p.188). However, the recommendations by measurement specialists do not offer a compromise.

To close the gap between theory and practice, a practice allowing teachers to mix the roles of advocate and judge should be developed. Schneider (2014) suggests that the practice should meet four characteristics: (a) perceived significance, (b) philosophical compatibility, (c) occupational realism, and (d) transportability. Hence, the challenge is to create a practice that allows teachers to instruct, encourage, and assess students of varying ability levels while maintaining validity according to the uncompromising recommendations of the measurement specialists. This challenge requires a more in-depth look into assessment practices and the differing beliefs and values associated with measuring student performance and academic achievement.

Assessment practices. Brookhart (1991) refers to teacher grading practice that considers a variety of compliance factors including ability, effort, and behavior when assigning performance grades that measure elements other than academic achievement as "a hodgepodge grade of attitude, effort, and achievement" (p. 36). This type of grading is a confusing amalgamation of academic and nonacademic variables, and rarely presents a valid picture of student proficiency (Guskey, 2006, 2011). At times this grading practice is capable of having a detrimental effect on students (Stanley & Baines, 2004). For example, a student's grade that is inflated by extraneous nonacademic factors such as attending a school event after school hours may give the student a false sense of academic achievement. Conversely, a student whose grade is deflated for extraneous nonacademic factors such as not putting his or her name on an assignment, or being absent from school, results in the student's academic achievement being underrepresented by the grade.

The research by Cross and Frary (1999) and Randall and Engelhard (2010) indicate that education professionals appreciate the significance of validity in assessment and grading, and recognize the concerns associated with hodgepodge grading. Yet, teachers confess to incorporating both compliance factors and academic achievement measures when calculating performance grades. In the Randall and Engelhard (2010) study, teachers acknowledged that while their school or district had policies and guidelines in place allowing only academic achievement to be represented in student grades, they often disregarded these policies when computing performance grades. The teachers defended their practice of hodgepodge grading by stating that they do not devalue validity in assessment, but rationalize that they need to use such performance grades as a way to motivate students (Randall & Engelhard, 2010; Stanley & Baines, 2004).

Furthermore, even though students and parents candidly admit that they are aware that nonacademic factors such as notebooks, attendance, class participation, preparedness, and organizational skills embedded in the hodgepodge grade weaken grade validity, there has been no vociferous call for reform (Cross & Frary, 1999). An inference could be made that although stakeholders are aware that a teacher's subjectivity may generate a grade that is invalid through the process of grade inflation (Howley, Kusimo, & Parrott, 2000; Stanoyevitch, 2008) or grade deflation (Howley et al., 2000), a higher value is placed on the grade that is inflated when nonacademic factors are considered in calculating performance grades (Cross & Frary, 1999). Seemingly, grade inflation through extraneous factors produces a surface validity that has considerably more value to many stakeholders than the concept of authentic validity (Cross & Frary, 1999).

Nevertheless, a positive or a negative consequence of performance grades that result from a teacher inflating or deflating a grade based on extraneous nonacademic factors produces an invalid performance grade that misrepresents the student's level of academic achievement.

Summary

The debates generated throughout the past century concerning grading practices that accurately measure student achievement and effectively communicate students' level of mastery have generated numerous and conflicting viewpoints. Present assessment practices incorporate a variety of factors that stem from various perceptions concerning the purpose and meaning of grades. The consensus is that the main purpose and meaning of grades are to accurately articulate academic achievement to various stakeholders. How one defines successful academic achievement appears murkier. For grades to fulfill their purpose of accurately articulating academic achievement, the only factors that should be included in the calculation of performance grades should be those that represent what the students know and are able to do (Cross & Frary, 1999; Guskey, 1994, 2006; Marzano, 2000; Nitko, 2004; Popham, 2006). However, the review of the literature shows that teachers forego the recommendations in practice by arbitrarily inflating or deflating performance grades with nonacademic factors such as ability, effort, and behavior. Thus, while teachers agree with the measurement community in theory, they consider additional concepts such as the meaning, value, relevance, and purpose of grades when measuring student performance and academic achievement (Randall & Engelhard, 2010).

Chapter 3: Methodology

The main focus of this study was to examine recommendations by measurement specialists on an effective method for evaluating and reporting student academic achievement. This study received exempt status from the Institutional Review Board at Appalachian State University (Appendix A). The purpose was to see whether assessment practices advocated by measurement experts helped teachers determine students' level of mastery and whether the practices were actually feasible for classroom teachers. This could only be achieved through action and reflection. Somekh and Lewin (2005) stated, "Action research directly addresses the problem of the division between theory and practice" (p. 89). The underlying issue to the problem is the divide between measurement theory and actual classroom practice. Since the goal of the study was to address this disparity, action research seemed to be the most appropriate methodology.

Study Context

This study was conducted with four high school teachers in a small, rural Kindergarten -12 grade charter school located in the Appalachian Mountains of North Carolina. The participating school was one of North Carolina's original public charter schools, and was located on the campus of a group home for children who have been abused, abandoned or neglected. The school serves the residents of the group home as well as students from the community. With 78% of students economically disadvantaged, the school qualifies as a Title I School. The school's average daily membership (ADM) is

105; approximately 75-80 students are residents of the children's group home and 35 students reside in the local community. The majority of students (96%) are Caucasian with a comparatively equal percentage distribution of males (50%) and females (50%). Because the majority of students are in the custody of the Department of Social Services, these percentages fluctuates as the length of placement for the residential students is dependent on the circumstances that surround the court case for each individual child. The average stay for 62% of residential students is less than one year. Because these students are residents of other counties, when they are relocated via DSS and court orders, the students are withdrawn from the participating school. Hence, while the ADM is approximately 105 students, the school serves approximately 160 students each academic year. This mobility rate is a unique challenge for teachers at the participating school as they strive to provide academic instruction that shows measureable growth on state summative tests.

In 2012, the school was identified as a Priority School, which is a preliminary classification for a School in Improvement. Schools identified as being in *improvement* receive funding as determined by the federal School Improvement Grant (SIG). When a school receives this federal funding, their classification changes to a School in Improvement, or a SIG school. The SIG uses the school transformation model and requires schools to: (a) develop and increase teacher and school leader effectiveness, and (b) implement comprehensive instructional reform strategies. The comprehensive needs assessment (CNA) conducted by the SIG division of the Department of Public Instruction revealed that the participating school lacked effective classroom instruction strategies that

engaged students in higher order thinking skills and was in need of implementing improved comprehensive instructional reform strategies that use data to drive instruction.

Methodological Approach

This study is best viewed as an action research study using components of qualitative design to empower individuals to share their stories. Investigators conduct qualitative research in order to better understand the contexts in which teachers in a study address a problem or situation, to minimize the power relationships that exist between researchers and participants, or to follow up on quantitative research to help explain the mechanisms or linkages in causal theories (Creswell, 2012). Qualitative methods are beneficial in that questions give participants the opportunity to respond in their own words. Open-ended questions have the ability to evoke responses that are meaningful, engage feelings, are culturally relevant to the participant, and are unanticipated by the researcher (Glesne, 2011). "The intent of such interviewing is to capture the unseen that was, is, will be, or should be; how respondents think or feel about something; and how they explain or account for something" (Glesne, 2011, p 134).

According to McNiff and Whitehead (2005), Action research is a common-sense approach to personal and professional development that enables practitioners everywhere to investigate and evaluate their work, and to create their own theories of practice. (p. 1) In addition, McNiff and Whitehead (2005) asserted that this cyclical process involving action, perception, and evaluation enables teachers to develop professional competence and improve their teaching practice that results in improved academic achievement. This idea is supported by Mills (2003) in that action research informs teachers about their practice and empowers them to take leadership roles in their teaching discipline.

Action research is "inquiry that is done by or with insiders to an organization or community, but never to or on them. It is a reflective process, but is different from isolated, spontaneous reflection in that it is deliberately and systematically undertaken" (Herr & Anderson, 2005, p. 3). An action research project seeks to create knowledge, propose and implement change, and improve practice and performance. It is often conducted to discover a plan for innovation or intervention and is collaborative. Action research allows the researcher to describe the problem and the area of focus, and define the factors involved in the area of focus, such as the instructional strategies and student outcomes. Researchers using this approach to develop research questions describe the intervention or innovation to be implemented, and develop a timeline for implementation. In addition, researchers describe the data to be collected, the collection process, and the plan for data analysis. Lastly, it carries out the plan and reports the results (Stringer, 1996).

The defining features of action research reflect the qualities of leaders in collaborative cultures of change. These qualities include a deep understanding of the organization, vision and insight, a quest for new knowledge, a desire for improved performance, self-reflective activity, and a willingness to effect change (Fullan, 2001). Although there are many kinds of action research frameworks, the underlying concept of action research is the emphasis on the potential to emancipate and empower teachers through cycles or phases (Kemmis & McTaggart, 1988). By using this approach, I gained insight from observation and interviews into the teachers' perception concerning the practicality of the recommendations by measurement specialists in effective methods of evaluating and reporting students' academic achievement. Teachers were empowered to

become change agents—to build up their own theories and test them in real situations. This project allowed them to become critical consumers of theory and use their voice to advocate for practical solutions that bridge the gap between theory and practice.

Action Research Model

I used the action research model of Kemmis and McTaggart (1988) which suggested four phases: (a) planning a change, (b) acting and observing the process and consequences of the change, (c) reflecting on these processes and consequences and then re-planning, (d) acting and observing, and (d) reflection. This cyclical process may appear muddled as the phases overlap. However, if original plans are given the opportunity to run the course through all the phases of the model, the result of the experience results in improved plans.

Figure 1 illustrates the spiral model proposed by Kemmis and McTaggart (1988, p.14).

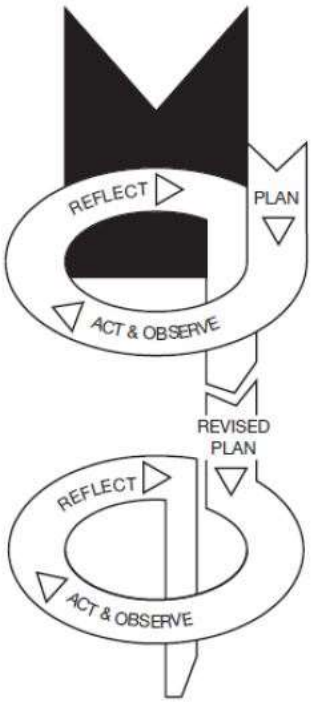

Figure 1. Spiral action research model adapted from Kemmis and McTaggart (1988 p.14).

Kemmis and McTaggart (1988), indicate that linking the terms a*ction* and *research* together highlights the essential feature of the approach. Taking action to implement researched-based classroom practices results in improved teaching and learning. They reported,

> Action research—a form of collective self-reflective enquiry undertaken by participants in social situations in order to improve the rationality and justice of their own social or educational practices, as well as their understanding of these practices and the situations in which these practices are carried out. (p. 1)

Since the primary focus of action research is on solving problems, action research is frequently used in real situations. Researchers who apply this approach are often

practitioners who wish to improve understanding of their practice. A holistic approach to problem-solving rather than a single method for collecting and analyzing data, action research allows for several different research tools to be used while conducting the project. These various methods are common to qualitative research and include documenting data collection and analysis, teacher observation recordings, structured and unstructured interviews and self-assessment methods such as reflective journals (Kemmis & McTaggart, 1988).

The fundamental idea of new knowledge that leads to changing and improving practice is relevant to the main goal of my inquiry. I analyzed the educational problem; I worked with the teachers to develop a plan of critically informed action to improve what was happening in their classrooms; the teachers acted to implement the plan; they observed the effects of the action; and then they reflected through interviews on these effects as basis for further planning (Glesne, 2011; Herr & Anderson, 2005).

Training

The first three phases of the study built upon the training in classroom assessment practices that the teachers received in the spring of 2014 (see Appendix B for Training Framework). I conducted three separate training sessions using research-based formative classroom assessment recommendations and practices (Brookhart, 2008, 2013; Chappuis, 2009; Chappuis, Stiggins, Chappuis, & Arter, 2012; Marzano, 2009, 2010; Marzano & Pickering, 2011; McTighe & Wiggins, 2013; Moss & Brookhart, 2009, 2012; Popham, 2008; Wiliam, 2011). Since planning time for teachers during the school day is limited and often consumed by administrative tasks, as a matter of practicality to meet the vicissitudes of classroom life, the training sessions were conducted after school. Each

training session lasted approximately two hours and focused specifically on one of the following elements of formative assessment:

- Cycle 1: the construction, alignment and use of learning targets;
- Cycle 2: the construction, alignment and use of rubrics;
- Cycle 3: the method and content of feedback that feeds forward;
- Cycle 4: goal setting self-assessment and strategic questioning.

The four teachers, each representing a core academic subject (English, math, social studies, and science), applied the strategies learned in training to their assessment practices and gathered samples throughout the study of learning targets, evidences of student learning, rubrics, feedback, self-assessment, and the assigned performance grade. All identifying marks to the student work were removed (i.e. teachers made copies of student work with the name blanked out) as the point of the study was to analyze the alignment of the learning target, rubric, feedback, and assessment to determine if the implementation of these classroom assessment methods helped the teacher better articulate how he or she arrived at the performance grade.

Research Design

The cyclical nature of action research, not coming to a natural conclusion, goes beyond knowledge to include personal and professional growth and change, as well as organizational and community empowerment. The design of this action research builds on the knowledge the teachers received in the training sessions, and subjects the recommended assessment strategies to the action research model of Kemmis and McTaggart (1988). Exposing research to repeated cycles and phases allows action and

reflection as well as theory and practice to come together in pursuit of practical solutions—the main purpose of my inquiry.

Action research is often conducted to discover a plan for innovation or intervention and is collaborative. Therefore, in the fourth phase of the action research project, the teachers reflected through interviews about the implementation process and the practicality of the assessment practices. The interview questions were designed to determine whether the assessment practices taught in the training (a) supported the learning in the classroom, (b) provided supporting evidences that accurately articulated student academic achievement, and (c) were practical classroom assessment practices.

Design Rationale

Action research helps educators and measurement specialists become more aware of the issues that hinder a collaborative effort to bridge the gap between theory and practice. Through this process, teachers gained insight into how to implement valid assessment practices that accurately articulate student achievement. I gained insight through interviews into the practical nature of the assessment practices in the classroom, and suggestions on how to implement a school-wide initiative. This allowed me to apply the research outcomes to initiate the collaborative effort between measurement specialists and teachers in how to best implement assessment practices that are actually more accurate and practical for classroom teachers.

Data Sources and Collection

The data collection primarily involved interviews with four high school teachers, each representing a core academic subject (English, math, social studies, and science), to determine if recommended classroom assessment strategies help teachers to more

accurately articulate student achievement when assigning performance grades. The teachers brought to the interview evidence of learning targets, rubrics, feedback, and student self-assessment and strategic questions. In addition, the teachers provided their field notes that contain questions, concerns, and suggestions about the implementation process.

Interviews. In qualitative interviews, an appropriate data collection strategy is personal interviews (Creswell, 2012). I chose personal interviews as the primary data source for four reasons. First, the purpose of interviewing is to find out what other people think. According to Patton (1987), "We interview people to find out from them those things we can't observe" (p. 196). Second, qualitative interviewing is appropriate when trying to study and understand the meaning of a person's world (Kvale, 1996). Third, qualitative interviews are richly descriptive of the subject being studied, enabling readers to make decisions about transferability of study results (Merriam, 2002). Lastly, interviews allow for triangulation of information obtained from other sources such student work samples, teacher field notes, and reflective journal entries, thus increasing the credibility of study findings (Creswell, 2012; Glesne, 2011; Maxwell, 2005; Merriam, 2002).

I conducted standard, open-ended interviews in which I asked the same open-ended questions to all interviewees. The teacher participants were interviewed approximately every two weeks between October, 2014 and January, 2015. Receiving prior approval from each teacher, I audio taped the interviews to ensure accurate transcription (Merriam; 2002). In addition, I took handwritten notes during each interview to highlight suggestions and concerns of particular interest. The interviews

were conducted at a location within the school that was convenient, quiet, and not subjected to interruptions. The location within the school varied depending on the school activities that were taking place on the day of the interview. All interviews were conducted face-to-face and lasted approximately 20 - 45 minutes.

The teachers were asked questions listed in the interview guide (Appendix C). The open-ended questions allowed for more in-depth responses, and led to more probing questions. I modified the subsequent questions accordingly. The reflective nature of the questions aided in the teachers not feeling rushed to answer. The first interview focused on the construction, alignment, and use of learning targets and rubrics. The second interview focused on the method and content of feedback that feeds forward. The third interview focused on goal setting, self-assessment, and strategic questioning. The final interview focused on the teachers' overall experience and how well the teachers perceived that they were able to accurately articulate the meaning of the grade as it relates to student mastery of the content. The teachers explained their experience implementing the assessment practices in the classroom and shared their concerns and/or suggestions. The interviews focused specifically on the implementation of the formative assessment elements addressed in training, and any changes in perception and/or practice by the teachers as a result of their overall experience. Six interview questions were asked that focused on each training element, and three questions were asked concerning a change in perception and/or practice as a result of their experience. A transcriptionist was paid to transcribe each interview within days of the interview, and I reviewed each transcript while listening to the audio tapes. Each teacher received a copy to review and request changes. This process ensured validity of their responses.

Participants. An action research participant is either in control of the research or is a participant in the design and methodology of the research (Herr & Anderson, 2005). Participants for this inquiry were selected based on a common characteristic (Patton, 1990). Limited to high school teachers from a small charter school in the rural mountains of North Carolina, four teachers, each representing one of the four core academic subjects (English, math, social studies, and science), agreed to participate. The decision to choose a teacher that represents one of the four core academic subjects at the high school level was made so that perspectives about classroom assessment practices in different academic disciplines can be gathered rather than being limited to gathering and analyzing data within the same subject content. This approach creates a more comprehensive study because it allows for the core academic subjects that tend to be more subjective in classroom assessments, such as English and social studies, to be compared and contrasted with subjects that tend to employ more concrete assessments such as science and math.

Data Analysis

In this type of study there is a continuous interaction between data collection and data analysis (Creswell, 2012; Glesne, 2011; Maxwell, 2005). Therefore, after each interview I began to analyze the data by looking for any emerging patterns or themes. This helped me in subsequent interviews to make meaning out of the data. Because qualitative analysis is a process (Creswell, 2012; Glesne, 2011; Maxwell, 2005), I followed the data analysis and coding procedures suggested by Creswell (2012), Glesne (2011), and Maxwell (2005). I worked intensively with the data, deconstructing the interviews line by line to identify reoccurring themes and categories that emerged. Statements concerning the general use and purpose of the assessment strategies were

coded in blue. Comments regarding how the assessments help to articulate student achievement were colored green. Positive statements about the practicality of the assessments were coded in pink, and challenges that the teachers encountered were colored red. Once the data were examined thoroughly through the color coding process, I reviewed the codes for themes that emerged through the data analysis. The qualitative data analysis is shared in narrative form in the following chapter.

During the data analysis process, I followed Creswell's (2012) six step process. While the steps are described in a linear order, there is a recursive component that involves an interactive practice to the analysis. In other words, "These steps are not always taken in sequence, but they represent preparing and organizing the data" (Creswell, 2012, p. 237). Table 1 list the six step process (Creswell, 2012) and how they were incorporated into the study.

Table 1

Incorporation of Creswell Steps into Current Study

Step	Creswell	Current Study
1	Prepare and organize the data for analysis (p. 238)	I reviewed audio tapes from interviews and transferred them into word document transcripts
2	Explore and code the data (p. 243)	I read the transcripts thoroughly and reflected on the overall meaning the teachers wanted to convey. I began to organize the data into segments.
3	Use codes to build description and themes (p. 247)	I organized my segments into categories and then labeled the categories with terms based on the actual language from the teachers.
4	"Represent and report findings" (p. 253).	I wove the emergent themes into narrative passages, so that the findings emerged logically from the teachers' responses.
5	"Interpret findings" (p. 257) and "validate the accuracy of your findings" (p. 259)	In order to make sure my findings and interpretations were accurate, I validated my findings through triangulation, member checking, and external audit.
6b	"Triangulation is the process of corroborating evidence from different individuals…types of data…or methods of data collection…" (p. 259)	I triangulated the data and used multiple sources of data, such as the teachers' field notes and student work samples, to confirm my findings.
6c	"Member checking is a process in which the researcher asks one or more participants in the study to check the accuracy of the account" (p. 259)	I performed member checks by sending teachers a copy of their interview transcripts and asked them to verify the accuracy of the content.
6d	External audit is the process "in which a researcher hires or obtains the services of an individual outside the study to review different aspects of the research" (p. 260)	I requested my committee to review my findings as they emerged.

Note: Adapted from Creswell (2012).

Creswell points out during step five how the researcher's own background plays an important role in the meaning-making process. Since my role as the principal of the participating school informs my understanding of the teachers', I was intentional in focusing on what the teachers were saying in the interviews so to convey their perceptions of their experiences accurately. This step highlights the importance of qualitative researchers being keenly aware of maintaining validity and trustworthiness in their research. Because qualitative research entails the researcher taking an active role in the collection and interpretation of the meaning making of others, to be credible, researchers must learn to understand their research as their participants do so that they do not impose their own assumptions on the study.

Role of the Researcher and Ethical Issues

Internal Review Boards often question risk factors associated with action research settings, as the research participants also serve simultaneously as subordinates within the organizational settings. Power relations that arise when the action researcher is also an insider to the organization can complicate a study. To meet the ethical challenges associated with action research studies, Silverman (2006) suggests following the "Ethical Safeguards" model. This model has four safeguards:

1. Ensuring that people participate voluntarily.
2. Making people's comments and behavior confidential
3. Protecting people from harm.
4. Ensuring mutual trust between researcher and people studied. (p. 323)

I took the following measures to ensure ethical safeguards. As the principal of the charter school where the study was conducted, I am the direct supervisor of the teachers in the study. Therefore, the Consent to Participate (Appendix D) specified that participation was voluntary and that I, as their direct supervisor typically responsible for summative evaluations, would be removed from the role of observer/evaluator in job performance evaluations for the duration of the study, and another administrator in the agency would evaluate the teachers' job performance. This involved walk-through observations, as well as quarterly and summative observations and evaluations using the North Carolina Educator Evaluation System (NCEES) as required by the North Carolina Department of Public Instruction. Prior approval to conduct the study was sought and granted from the agency's Board of Directors; a Letter of Agreement (see Appendix E) was signed acknowledging the involvement of the agency and its employees. The Letter of Agreement was an assurance to the teachers that their participation was voluntary and would not result in any adverse employment consequences. Each teacher was required to give consent to participate in the study.

The time and location of the interviews and training was accessible, appropriate, practical, and convenient for each individual teacher. The research was conducted and applied in the field in a natural real-time setting of a semester grading period to understand the practical struggles that teachers face implementing formative assessment practices in the classroom. In addition, the setting provided an environment that allowed teachers to explore and apply research-based strategies recommended by measurement

specialists, intended to aid teachers in implementing proper formative assessment practices in the classrooms.

Summary

An action research study that includes observations, interviews, and program evaluation was conducted. Interviews were conducted to examine the assessment practices and whether evidences gathered from these practices support performance grades that accurately articulate student achievement. The challenge was to assess the recommended practices when implementing them in the everyday life of the classroom. This study was intended to identify specific reasons the gap exists between measurement theory and teacher assessment practices, and offer suggestions on how to bridge the gap. The results of this study can inform teacher training and teacher practice in valid classroom assessments that allow teachers to instruct, encourage, and assess students of varying ability levels while maintaining validity according to the recommendations of leading measurement specialists. The themes that emerged throughout the interviews are discussed in the next chapter.

Chapter 4: Results

In this study, teachers were empowered to become change agents, to build their own theories, and to test them in real situations. The results demonstrated the power of the formative assessment recommendations by measurement specialists. The teachers confirmed that the recommendations can be successfully implemented at every grade level and in every subject matter throughout the instructional day. In addition, they verified that the process of implementing the recommendations created a partnership between teacher and students where the teacher can better help harness the academic potential of students and guide them in taking ownership of their learning.

However, like any other powerful process, implementing the recommendations with fidelity takes time and training. In addition to being a formative assessment process, the recommendations are a learning process for all stakeholders and will take time and training to grow and develop before it becomes a part of the school culture. But, because this project provided the teachers an opportunity to become critical consumers of theory and use their voice to advocate for practical solutions that bridge the gap between theory and practice, the learning curve is decreased considerably.

The first three phases of the study built upon the training the teachers received in the spring of 2014 on effective classroom assessment practices. Three separate training sessions were conducted using research-based, formative classroom assessment recommendations and practices (Brookhart, 2008, 2013; Chappuis, 2009; Chappuis,

Stiggins, Chappuis, & Arter, 2012; Marzano, 2009, 2010; Marzano & Pickering, 2011; McTighe & Wiggins, 2013; Moss & Brookhart, 2009, 2012; Popham, 2008; Wiliam, 2011). After the training, the teachers followed the four phases of action research as suggested by Kemmis and McTaggart (1988), and (1) planned a critically informed action to improve on what was happening, (2) implemented the plan in their classroom, (3) observed and documented the effects of the action and (4) reflected through interviews on these effects as basis for further planning (Glesne, 2011; Herr & Anderson, 2005).

Four high school teachers served as research participants for this study. The names of the teachers and the name of the participating school were withheld throughout the study to maintain anonymity. Teachers are referenced by the subject matter they teach (i.e. English teacher, math teacher, social studies teacher, and science teacher). The participating school is simply referred to as the participating school. Table 2 demonstrates relevant teacher demographic information.

Table 2

Demographic Information for Teachers

Subject Area	Degree Level	Years of Experience
Math	Bachelor's	4
Science	Master's	3
Social Studies	Bachelor's	2
English	Master's	4

The teachers had not taken nor were required to take a classroom assessment course during their degree work. One teacher confessed that her classroom assessment practices were based on how she was assessed as a student,

> I didn't really know what I was doing. I never took a class on assessment, so I used what I called common sense, but it was probably just how I was assessed. I was a good student, I learned well from lectures, and I was a good test taker, so I think I was assessing using my strengths.

This finding was consistent with Guskey (2004, 2006), who reported that teachers developed grading practices based on their past experience, indicating that their practices as teachers mirror what they were subjected to as students.

In this chapter the findings from the reflective interviews, which occurred during the fourth phase of the project, are discussed. Themes that emerged from interview transcriptions and field notes are analyzed. Building on the knowledge teachers received in the training sessions, they reflected through interviews on the implementation process

and the practicality of the assessment practices. As previously mentioned, the action research cycles of this study consisted of the implementation of four training components:

- Cycle 1: the construction, alignment and use of learning targets;
- Cycle 2: the construction, alignment and use of rubrics;
- Cycle 3: the method and content of feedback that feeds forward;
- Cycle 4: goal setting self-assessment and strategic questioning.

The interview questions were designed to determine whether the assessment practices taught in the training (a) supported the learning in the classroom, (b) provided supporting evidences that accurately articulated student academic achievement, and (c) were practical classroom assessment practices. The process of running the research through repeated cycles and phases allowed action, reflection, adaptation, as well as theory and practice to come together in pursuit of practical solutions — the main aim of the inquiry.

The purpose for each cycle was two-fold. First, each cycle gave teachers opportunity to learn how to implement valid assessment practices drawn from the research that accurately articulated student achievement in the classroom. Second, reflective interviews provided the data necessary to bring teacher self-awareness to issues that hindered a collaborative effort to bridge the gap between theory and practice. The following section discusses each cycle and key findings that emerged from the interviews, the teacher's reflections in field notes, and the review of the documents.

Cycle 1: The Construction, Alignment, and Use of Learning Targets

According to Moss and Brookhart (2009), learning targets give lessons purpose. They guide the learning for each lesson by describing in student-friendly terms what students need to learn and the skill and reasoning process they need to learn it. Table 3 represents examples of learning targets that were part of a unit on the U.S. federal bureaucracy (Brookhart & Moss, 2012).

Table 3

Learning Targets for Part of a Federal Bureaucracy Unit

Lesson	Learning Target
1	Students will learn the characteristics of a bureaucracy and three agencies or subunits of the federal government.
2	Students will learn the makeup and responsibilities of the Executive Office of the President.
3	Students will learn the makeup and responsibilities of the cabinet departments and their relationship to the Executive Office of the President.
4	Students will learn the makeup and responsibilities of three types of independent agencies.

Note: Adapted from Brookhart and Moss (2012).

The learning target gives the lesson its own "reason to live" (Moss & Brookhart, 2012, p. 29). However, to be effective, each learning target should build on the learning target from the previous lesson until the larger curricular goals and state standards have been

achieved (see Table 3). When learning targets are developed, shared, and actively used by teacher and students, a classroom environment is created where teaching and learning are intentional and students take ownership of their education (Moss & Brookhart, 2009). This was supported by Seidel, Rimmele, and Prenzel's (2005) study that showed clear learning targets helped students learn and positively influenced student achievement.

Use and purpose. With the teachers' lack of training and exposure to classroom assessments, there was no surprise when the teachers reported before the training that their uses of learning targets and formative assessments were limited or nonexistent. All teachers admitted that what they had considered to be their learning target was actually broad standards and objectives listed in the North Carolina Standard Course of Study. The math teacher explained that before the training, the learning target served more as method to get students to organize their notes. She would say to the students, "This is the title of the notes; label your notes this way." The other teachers identified their learning target as broad concepts they planned on teaching that day, such as the Great Awakening, rather than what the students were to learn. Moss and Brookhart (2012) clarified this common misunderstanding, "A learning target is not an instructional objective. Learning targets differ from instructional objectives in both design and purpose" (p. 3). An instructional objective guides instruction while a learning target guides the learning as "a lesson-sized chunk of information, skills, and reasoning processes that students will come to know deeply" (Moss & Brookhart, 2012, p. 3). For example, the learning target for the instructional objectives: "Students will explain how the element of chance leads to variability in a set of data," and "Students will represent variability using a graph" would

read, “We will be able to see a pattern in graphs we make about the number of chips in our cookies, and we will be able to explain what made the pattern” (Moss & Brookhart, 2012, p. 39). This learning target incorporated the three components necessary to properly construct a learning target from an instructional objective: (a) identifying the essential skills in the objectives (e.g., seeing and understanding patterns, and making bar graphs), (b) defining the reasoning process for the lesson (e.g., analyzing, cause and effect), and (c) designing a strong performance of understanding (e.g., observing, graphing, analyzing) (Moss & Brookhart, 2012).

After the training, teachers agreed that they had a better understanding of the purpose and importance of learning targets, and now use them on a daily basis. The social studies teacher reported that after learning that a learning target was more than a curriculum standard or course objective, she began constructing them, “with a purpose; because I understand how important it is, I pay more attention to it.” The English teacher agreed:

> Now that I know what they are and what to do with them, I think they are the greatest things ever. It gives me direction. I know what’s happening that day, and the students, I feel like, they have a goal for the day.”

The science and math teachers also expressed how learning targets frame their lessons for the day and focus the students. The science teacher noted that with the learning target posted either electronically or on the board at the beginning of class, “the lesson gets started immediately.” The math teacher concurred with this process, “That is how we

started out the lecture each day is talking about what this applies to, what we have learned up to this point, and how it's going to help us reach the target for the day."

The teachers used their daily learning target as a basis for focus and review. Students recorded the day's learning target in some format, whether in a notebook or on the computer. The teachers then built on the previous day's lesson in a class discussion by reviewing the previous day's learning target. This often involved using information gained from exit tickets, a popular formative assessment taught in the training and now used regularly by each teacher. Exit tickets are questions or activities directly aligned to the learning target that the students were required to answer/demonstrate at the end of class. The teachers reviewed the exit tickets after class to gain awareness of students' understanding of the day's learning target. Based on students' answers, the teachers adjusted their lesson plans accordingly. When asked about the process of adjusting their lesson plans based on students' exit ticket responses, the social studies teacher said that she pushes her "lesson plan back and re-teaches it tomorrow in a different way and maybe the next day, too, depending." She noted that if most of the class was not able to demonstrate understanding of the learning target, she held herself accountable as she found that it was usually because she did not provide enough background information to understand the concept. She admitted that often she made assumptions about concepts she thought students learned in elementary school. Hence, the next day she adjusted her plans by restating the learning target and began her class with a fifteen minute mental field trip to cover the background information.

This idea of re-teaching, reviewing, or refocusing the learning target for the next day's lesson based on the information gleaned from the exit ticket or other formative assessment strategy was expressed by all teachers. If one student or a small percentage of the class didn't grasp the learning target concept, all teachers said that they worked with the student(s) individually after school, or provided more focused individualized instruction during class while the other students worked in groups or independently. The math instructor explained,

> If I see students having trouble with two or three steps, or not getting the concept at all, I'll spend the day with them working individually on problems. I'll start just circling around the room helping wherever is needed for each student.

The math teacher also said that she offered opportunities for individual help via after school tutoring.

The recommendation to write the learning target in student-friendly language (Chappuis, 2009; Moss & Brookhart, 2009, 2012) presented a challenge for all teachers. While the English, science, and social studies teachers assigned students the task of rephrasing the learning target, the math teacher preferred to do the rewording herself. However, whether student-driven or teacher-directed, all teachers struggled with writing learning targets in student-friendly language. This struggle will be discussed in further detail later in this chapter.

Articulation of student achievement. When asked if the use of learning targets helped articulate student achievement more clearly, the teachers responded with a resounding "yes." All teachers agreed with Moss and Brookhart (2009, 2012), and

Chappuis (2009) that properly constructed and aligned learning targets, coupled with daily formative assessment, such as exit tickets, kept both the student and teacher focused and organized throughout the lesson. The formative assessment conducted at the end of class brought awareness to both the teacher and students as to the measure of understanding the student had of the learning target being taught. By having students record the learning target and demonstrate their understanding, the teacher and student were provided with documentation, be it through exit tickets, or some other form of formative assessment that showed the level of student achievement for each learning target. For example, Figure 2 shows an exit ticket that was posted electronically by the social studies teacher after the lesson on the Progressive Era. Before leaving class, the students' task was to choose the correct answers to the questions and then submit their answers online:

Progressive Era Exit Ticket

What were the goals of the Roosevelt Corollary and dollar diplomacy?

- to increase U.S. power in Latin America
- to contain the spread of communism in eastern Europe
- to protect free trade on the Asian continent
- to strengthen political ties with Western Europe

What was the Roosevelt Corollary to the Monroe Doctrine?

- It provided for the purchase of land to build a canal across Panama
- It warned the nations of Europe not to impose high tariffs on goods from the Americas
- It stated that the US would intervene in Latin American affairs as needed for political and economic stability
- It reinforced the policy of isolationism of the US in world affairs

Figure 2. Electronic exit ticket.

Using online exit tickets such as Figure 2 were popular with the teachers because of the efficient way the software tool recorded the student responses and provided the teacher immediate feedback on student achievement. For example, Figure 3 shows an example of the data generated from the software tool. The report displays an exit ticket from a math class. The questions, the answers of each student, and the calculation of the overall class performance are listed.

Slope					
	Total Score	Number of correct answers	Is the graph below a function? Yes or No	Evaluate the function f(x)=2.3x+10 when x= -4	Find the slope of the line that passes through the points (1,1) and (-3,0).
	100	3	Yes	0.8	1/4
	33	1	Yes	0.8	-4
	100	3	Yes	0.8	1/4
	67	2	Yes	19.2	1/4
	100	3	Yes	0.8	1/4
	67	2	Yes	0.8	-1/4
Class Scoring	77.8%	2.33%	100%	83.3%	66.7%

Figure 3. Exemplar of online exit ticket and class performance data.

In addition to using the online format and software tool, teachers used exit tickets requiring students to answer questions in narrative form on paper. The questions in Figure 4 were given to students at the end of class to be answered before they exited the room at the end of class.

1. How many zeros does this quadratic function have? Tell me how you know this?
2. Define one of the 4 transformations and draw an example.
3. In your own words, list the steps needed to solve the equation $2x - 5 = 11$.
4. What is a pun and oxymoron? Give an example. Why would Shakespeare choose to use them?
5. Why is it important for an essay to have the 9 parts of a body paragraph?

Figure 4. Exit ticket answered in narrative form on paper.

Challenges. The teachers agreed with the measurement specialists that the use of learning targets was necessary to help focus and organize both teacher and student. In addition, they agreed that the process provided documentation supporting performance grades as an accurate measure of student achievement. However, the teachers presented several challenges concerning the practical application of learning targets as recommended by measurement specialists.

The math and science teachers spoke of the challenge of creating a learning target in student language that incorporated the content terminology students needed to know. The math teacher, in particular, explained her struggle to incorporate math terminology into everyday language. While she made the math concept applicable to everyday life, describing the concept in student language rather than using the correct math terminology was very difficult. She explained, "Math terminology is math terminology, and student language is everyday language." She continued, "Trying to relate these bigger words, these vocabulary words, to things the students relate to is a struggle." For example, a

learning target listed in her lesson plans stated, “I can recognize perpendicular, parallel, and skew lines in nature.” This learning target provided the students with an opportunity to make practical application of the concepts by recognizing them in nature, but the terms perpendicular, parallel and skew are not necessarily everyday terms for students.

The science teacher also expressed difficulty in incorporating key words in the learning target while maintaining student-friendly language. Although he had the students reword the learning target, the process took time. This is evident in the science teacher’s field notes that showed a pattern of progression and regression in student understanding of the process. For example, the teacher recorded in his notes one month into the study,

> “Some students are still explaining their learning target in sub high school level wording.”

When the teacher’s lesson plans were crossed referenced with the field notes, the learning target for the particular lesson stated,

> “I can understand key aspects on plate tectonics and aspects underneath the earth that control these forces.”

The rewording by a student read,

> “I can tell you about plate tectonics.”

An entry by the teacher six weeks into the process provided the assessment,

> “Students are improving on constructing their learning targets.”

The learning target for the particular lesson stated,

> “Distinguish among the principles of force and motion.”

The student reworded the learning target to read,

"I can explain wave motion through the oceans and how it affects me."

However, at the eight week mark the teacher wrote,

"Students did a decent job explaining their learning target; however, they are still having issues with associating their learning target to the actual lesson."

But, a few days later, the entry spoke of student progress,

"The students did a much better job actually stating their learning goal. They followed the standards and probably 11 out of 12 met their achievement goal for the day."

The learning target for the lesson was

"I can understand the cause and effect of ocean acidification."

The student's corresponding learning target read,

"I can explain how different things in ocean acidity can affect climate change."

The English and social studies teachers did not express any issues about creating learning targets in student-friendly terms. This is probably a product of subject matter content; unlike English and social studies, the language of math and science tends to be so academic and precise in nature that it is all too often limited to the classroom.

Differentiating the instruction and the language of learning targets was also mentioned as a challenge. As a small school, the participating school did not have "leveled" classes (i.e., honors, college prep, general). Therefore, all classes contained a student population that ranged from academically gifted to special needs with inclusion. Differentiating instruction, as mandated by the North Carolina Department of Instruction (NCDPI) under the Individuals with Disabilities Education Act (IDEA) was a challenge

for the teachers. This challenge proved to be especially difficult during Cycle 2, The Construction, Alignment, and Use of Rubrics, and is discussed in more detail later in this chapter.

Another challenge the teachers faced was time. Each teacher spoke of the time involved in constructing learning targets that were written in student language and aligned to formative assessments, and the daunting time involved in adjusting and aligning lesson plans. However, all teachers agreed that the issue of time would not be as much of a challenge with more practice incorporating the strategies into their daily classroom routine. The science teacher said, "I can look back at what I did at the beginning of the semester and see that I am getting better as far as constructing, aligning, and using learning targets, and I think that it shows."

A review of the data indicated that all teachers improved over the course of the study in constructing, aligning, and using learning targets. Table 4 shows a comparison of the learning targets listed on the teachers' lesson plans at the beginning of the study to those at the end of the semester. The learning targets evolved from general statements into student centered "I can" statements that were succinct, specific, and observable or measurable.

Table 4

Comparison of Teacher Generated Learning Targets, From the Beginning of the Semester to the End of the Semester

Subject	Beginning of Semester	End of Semester
Math	I can review all material covered thus far.	I can solve problems involving the fundamental counting principle, permutation, and combinations.
Science	The student will know the names and symbols of elements on the periodic table	I can identify phase and phase changes for water on a temperature vs. heat graph.
English	The students will be able to make a comparison: *Their Eyes Were Watching God* vs. *Of Mice and Men*	I can read Charlotte Perkins Gilman's "The Yellow Wallpaper" and "Why I Wrote the Yellow Wallpaper" to analyze how the story shows the changing roles of women during the post-Civil War era.
Social Studies	The students will understand the Great Awakening	I can explain how the battles of the Revolutionary War were different based on location.

Cycle 2: The Construction, Alignment, and Use of Rubrics

Rubrics are multi-purpose scoring guides that work in a number of different ways to measure academic achievement. According to Brookhart (2013), "…rubrics have two major aspects: *coherent sets of criteria* and *descriptions of levels of performance* for these criteria" (p. 4). Giving structure to observation, rubrics are used to assess student performance or the product resulting from student work (Brookhart, 2013). Brookhart (2013) showed that when rubrics were created and used correctly, they were strong tools that supported classroom instruction and enhanced student learning. However, half of the study's teachers had never used rubrics before the training, and the use by the other half was limited to an occasional use of a generic rubric retrieved online for summative projects.

Use and purpose. All teachers agreed that rubrics guided their teaching, helped with student organization, and provided students with encouragement and academic awareness. They found that having the students create the rubric with teacher supervision before the lesson helped both the teacher and student stay focused. The science teacher reported that designing the rubric before the lesson allowed students to take ownership of the class, "It's their class instead of my class. They feel like they're participating in learning from the first minute." He also emphasized student accountability through rubrics stating,

> It leaves them taking control of their own education and feeling like, 'ok, the teacher's not going to give me an A, the teacher's not going to give me a B, I have to actually go out and try to meet this standard.

Similarly, the math teacher concurred that rubrics gave students ownership of their work, “I think the rubric made the students more aware. When students are creating the rubric they ask themselves, ‘How am I going to get from point A to point B?’” In addition, the teacher has also found that the rubrics offer encouragement to the students. “Even though they can’t get the answer,” she says, “they can see that learning is a process and they realize ‘ok, I’m getting stuck here—I can get here and then I don’t know what to do next.’ She clarified, “I mean, they can’t get the answer, but they get to feel good about getting something.” The data provided by the teacher supported this idea; on a piece of student work, the math teacher wrote, “You are correct in plugging in the point (2, 10) into the equations, but you aren’t solving for *b*. I want to know if (2, 10) is a solution.” Although the student did not arrive at the correct answer, the accompanying rubric gave credit on the steps done correctly.

The English teacher supported the idea that rubrics represented depth of knowledge and a measure of where students were in the learning process. She explained, “They know, ‘if I look here and do this column, that’s going to be a four.’” To have something tangible that the student can refer to is very helpful. “With a rubric,” she said, “the student is aware that if you do this, this, this, and this, chances are you’re going to get a higher score than if you don’t.” The English teacher also mentioned that the guidance provided by the rubric helped with classroom management. Recalling an observation she conducted of another class where the students and teacher seemed disorganized, she felt a need to point out to the teacher, “Maybe you’re all over the place right now because your kids don’t know where to go.” Comparing the experience to her

class, “Maybe our kids are as focused as they are because they know what they’re doing. If the student is calm, and they are where they need to be, that gives you more control over you classroom, so why would you not want that?” The social studies teacher, however, reported more of an internal change,

> I don’t think it’s affected my classroom management per se, but I have seen a change in myself. I've seen a change in the ease of which I run class. Having a road map of where we're going that day is great for the students, but it makes my job so much easier. I have the goal clearly articulated, thus I'm able to guide them to it much quicker.

Articulation of student achievement. The teachers were asked about how rubrics articulated student achievement, and a theme emerged around three words: proof, evidence, and documentation. All teachers spoke of rubrics providing them with documentation they felt was needed in order to defend their grading practice, and show proof that the performance grade received did accurately articulate student achievement in class. The social studies teacher reflected on parent-teacher meetings before she used rubrics. Laughing, she recalled, “Before a parent-teacher meeting I would say ‘well, they didn’t master the material’ and they would argue it, and I would just be sitting there hoping they would give up.” Now, with the use of rubrics, she had documentation to show whether they mastered the material or not, and why. She also acknowledged that her use of rubrics made grading easier and was “fair across the board.” Admitting her biases, she recounted,

> I do have biases, and sometimes I would put that bias into their grades, so the rubrics help me to not be biased, and help me to explain to the parents and students why they earned the grade they did.

The math teacher highlighted how the rubric brought the daily learning targets together, heightened student awareness about their work, and offered encouragement. She also agreed with the other teachers about the evidence the rubric provided, stating,

> I have more concrete evidence. I don't feel like students can fall through the cracks, whereas verbally I'm sure I missed someone along the way. When I have something to look at I can say, 'they understand, they can move on, or this one student needs some extra work.' So, it's like I'm reaching students better.

The science teacher spoke of the rubric giving students ownership of their work. Comparing a textbook to a student-designed rubric, he reported,

> I don't like textbooks, and I definitely didn't like them when I was in high school or elementary school because they were not worded for a student. By having students develop their own rubric, they know what the expectations are and there's no room for misunderstanding.

The science teacher also noted that his students developed the rubric as a class at the beginning of the lesson so they "know how they are going to be graded before they turn in their work. They know their grade before they turn in their assignment." Agreeing with the idea of student ownership, the math teacher noted, "The rubrics give students ownership." She explained that the students are writing their own rubrics; they are creating them so they know before they turn in their work how it will be assessed "as

opposed to turning something in and saying, 'I don't know how I did on this assignment.'" She added, "It's pushed me to be a better educator. It's changed the way I assess, grade, and use rubrics, so it's helping me."

Challenges. Teachers agreed with Brookhart (2013) that rubrics helped teachers teach, helped coordinate instruction and assessment, and helped students learn. However, their experience incorporating rubrics in their classroom practice was met with several challenges. Specifically, the teachers spoke of the challenge of creating rubrics that were written in student language, focused on learning and not tasks, and were clear on content and outcomes (Brookhart, 2013).

To overcome these challenges, all the teachers suggested more in-depth, continuous training. The English teacher explained,

> I've enjoyed making rubrics, now that I know how. It's easy to do, but I feel like not all educators know how and I think it would be a good idea if they were all taught. Because, for me, it provides a pathway, you're not scattered, you're organized. I think through training we would have some uniformity. I feel that some uniformity across all the disciplines would be easier, and would help to have everyone on the same page as far as how they are constructing, aligning, and using rubrics in the classroom.

The English teacher acknowledged that every classroom is different and she would not want to infringe on teachers' autonomy in their classroom, but she expressed how consistency in the rubric across the disciplines would help students as they moved from class to class.

Cross-curricular alignment was also an issue that needed consideration. When asked about the common rubric, the social studies teacher recounted,

> I'm not sure how I feel about that. I think that English and social studies work very well together, but I hesitate to think that there could be a common rubric between math and social studies. I essentially use rubrics for writing assignments and I'm not sure how many writing assignments you do in math.

Furthermore, issues around teacher autonomy and class expectations were addressed. "Sometimes teachers have different expectations for the same type of assignment," asserted the social studies teacher. She continued to discuss her dilemma acknowledging that having a common rubric would help with the time-consuming task of developing your own rubric, as well as help to cut down the confusion for students if every teacher assessed the same way; however, she found it hard to totally abandon the idea of teacher autonomy and wanting to set the expectations for students in her classroom.

The teachers acknowledged the usefulness of rubrics and how much they helped to focus the teaching and learning, but because of the time involved in creating effective rubrics, the teachers also reported that they did not use rubrics for every assignment. The math teacher expressed her difficulties using a rubric with every math activity or learning target,

> The rubrics have been difficult just to know how specific to make them as far as, 'ok, this problem is right or wrong, what's in between? How many steps do you have to complete to earn a whatever?' They're not practical for me every day.

Brookhart (2013) addressed the issue of designing math rubrics, "…you can't ask students to evaluate their own 'understanding of mathematical concepts and principles.' That is a judgment that must be made by an external observer" (p. 48). Brookhart believed that, "Student understanding of mathematical concepts and principles is exhibited in the course of 'figuring out' the solution to the problem" (p. 48), but admitted, "…incorporating how students would think, as well as speak, about their work into student-friendly language is not quite as obvious,…but it's there nonetheless" (p. 48). (see Table 5 for the Math Exemplar).

The social studies teacher admitted, "Rubrics save me a lot of time grading, but they're so time consuming to create that it's hard to make one for every project or assignment." She explained that although she used them more frequently for assignments such as speeches, writing assignments, and presentations, she did not use them for everyday assignments, "To make rubrics applicable to everyday assignments is just daunting. It takes time to build and so much is little assignments, 'Why would I make a rubric for that?' That's just not an efficient use of my time," she paused to reflect, "but, then sometimes you think it would help someone, that's why I would do it."

The English teacher admitted that she needed to do more with rubrics but time was also her issue. "Writing an explanation of the criteria for each proficiency level is very time consuming," she confessed. According to Brookhart (2013), if the rubric assesses "word choice" in an essay or "volume" in a performance, a performance-level description representing realistic expectations for the content and grade level needs to be

provided, “at all levels of a continuum of performance” (p. 28). The English teacher continued,

> I don’t know if you call it laziness or time restriction, but putting in a description in every box is very time consuming. Not to mention that all the descriptions are supposed to be written in student language that is easily understood.

However, the teachers did acknowledge that once they created a basic structure, the time needed to modify or differentiate the rubric was decreased which helped in terms of practicality. They also mentioned that when rubrics were used often enough as a part of the classroom routine, and if students received them at the beginning of the assignment, they made teaching easier and improved student interest and performance.

Finally, the teachers spoke of rubrics used as feedback that feeds the learning process forward. Rubrics can be copied, stored and referred to throughout the year as evidence of learning. The teachers emphasized that this was not only practical when articulating student achievement, it was critical.

The population of the school was another factor that created a challenge. The English teacher pointed out that because the population was small and classes were not leveled, designing a rubric that was written in student-friendly language and easily understood by all students in a class consisting of various academic ability levels was difficult. The science teacher agreed,

> I feel like a lot of my students right now are intellectually at a middle school level, and their vocabulary is low. I have to say, ‘ok, if I was in the fifth or seventh grade, what words would I understand at this age?’ You have to meet the

> students where they are academically and use the terms they would understand and relate to. But, in a class that has students who are at different levels academically it is difficult.

However, the English teacher's concern was more about differentiation. She explained, "There are some students who will understand a description of what a four is but then there are other students who will still not understand. So, then I wonder, 'Do I need to dumb it down even more?'" But, Brookhart (2013) stated,

> Student-friendly language does *not* mean simply easy vocabulary. It means that the descriptions are expressed in the manner that students would think about their work. Thus student-friendly language is not simply a matter of writing style; it's also about students' ways of thinking. (p. 48)

For example, a common description in rubrics about the mechanics of writing would state "Few mechanical errors are present" (Brookhart, 2008, p. 62). The "kid-friendly" rubric would read, "Not too many mistakes" (Brookhart, 2008, p. 62) The concept of translating rubrics written in teacher language into student language is not based on the idea that students do not understand teacher-written language, but rather as an easier and more fun way to help students understand and relate to the project's criteria (Brookhart, 2013). For instance, the language in the teacher rubric (Appendix F), "The thesis is clear. A large amount and variety of material and evidence support the thesis," translates into student-friendly language as "I make a good point and support it well." (Appendix G). The statement, "Information is not related to the point(s) the material is intended to support," translates to "No logical relation to the point." Although the teachers understood the

rationale behind kid-friendly rubrics, translating criteria into student-friendly language that incorporated writing style and students' ways of thinking was a challenge.

As the English teacher continued to talk about her challenge to create differentiated rubrics, she admitted that rubrics should be differentiated to an extent. But, she confessed that the issue of time in developing the rubrics, and the task of differentiating them for every student based on their ability level were daunting. However, she thought for a moment and recounted, "I guess I should because that's going to make the students more successful if I do." As she continued to reflect, a prevalent issue between theory and practice emerged, "A four for one isn't the same as a four for another." She paused and then asked me, "Is it?" I replied by asking her what she thought and she responded, "I don't think it is. I don't know, I'm not a measurement specialist, but to me, if there is not differentiation in what a four represents then we need a universal rubric for all schools."

The teachers wondered if classroom assessments were altered or differentiated to meet ability levels, would the measurement specialists argue that the validity of the assessment was compromised. However, Tomlinson and Moon (2013) refute the idea that differentiation in the classroom in some way results in invalid or unreliable classroom assessment practices; "There is a broad, pervasive sense that differentiation and grading practices are somehow at odds with one another" (p. 125). "Some educators feel as though differentiation calls on teachers to grade struggling students 'easier' and advanced students 'harder'" (p. 126). However, Tomlinson and Moon (2013) believe that best practices in assessment and grading are fully compatible with and supportive of the goals

of quality differentiation. When educators implement the advice of experts in the field of measurement, there is no conflict with the philosophy and practice of differentiation related to assessment and grading. Differentiation, defined as a process, which focuses on accommodating learners no matter what their differences so that all students in a class have the best possible chance of learning, is "not about jiggling grades" (Tomlinson & Moon, 2013, p.126). With the exception of those students who have an Individualized Education Plan (IEP) mandated by the IDEA, all students in a differentiated classroom should be graded against the same clearly defined criteria. In fact, best-practice assessment and grading facilitate and enhance a robustly differentiated classroom, creating an environment that maximizes student opportunity to achieve and, when possible, move beyond those criteria (Tomlinson & Moon, 2013).

Another challenge discussed that raised issues of practicality was whether rubrics should be time-bound. After the training was completed, the teachers acknowledged that behavior factors should not be incorporated in the grading process, and they stopped incorporating such factors as effort and participation. However, none of the teachers were willing to give up time-bound rubrics. The science teacher did concede that when it came to differentiation he was more lenient with time. He explained, "Certain students are going to be done faster than other students, so I differentiate the time allowed for the assignment based on the student." However, he stated,

> I usually give more time than needed for the assignment and will give any student extended time as long as they are on task. So, I don't usually deal with too many issues as far as having to count off on the rubric.

As far as the other teachers were concerned, a theme of accountability, responsibility, and preparation for the real world emerged when talking about time-bound assignments. The math teacher unapologetically noted,

> My rubrics are time-bound. I don't know if that's right or wrong. I hear both arguments and agree with both. But, my feeling is 'how can I move on at whatever time it may be if I don't have confirmation whether a student is ready to move on?' If I don't have some kind of time-bound on that assignment, they may take the whole semester to master the content and then they will be missing out on the rest of the information. Do I just not give them the rest of the information? They need that standard to hold them accountable. At some point I have to know if they are ready to move on. And, my students know that there are opportunities to meet the time-bound such as after school tutoring. If they take the opportunity they can get there; they can get to the point where they're ready for the next thing.

The English teacher also talked about accountability and responsibility:

> I used to be more lenient when it came to time-bound assignments. If the students turned in an assignment late I would give them credit for it, but I'm just natured that way. But, that's not teaching them responsibility, and when they go out from school into the workforce, the boss isn't going to be happy if they show up a day late for work. If the student doesn't learn responsible behavior now, then it's going to be a rude awakening when they get out in the world.

The social studies teacher concurred,

> I have to have students turn in their first draft on time so that I can know how the students are doing. And, I have to have the final draft turned in on time for accountability. If you don't factor time-bound into the grade, the student can argue, 'Well, the due date is not on the rubric, you can't grade me on not turning it in on time.'

She also admitted to her tendency to be lenient, "I don't grade students' participation or effort, but there are some kids that I would like to." When asked why that would be, she explained,

> Some kids are never going to get an "A" or a "4" unless we incorporate behavior factors. They're working very hard, putting in all this extra time, staying after school for hours every day to work on the assignment, and actively ask for help. Sometimes in my soul I would like to grade on effort. But, I don't, because I don't think it will help them in the long run.

As a means to help deal with these challenges, teachers requested more content-specific rubric examples that offered a list of terms that could be used when writing criteria descriptions in student-friendly language. The data collected from the teachers revealed that the content specific rubric examples provided in the training material (Brookhart, 2013) proved to be a valuable time saving resource for the teachers. However, the examples, while they covered a multitude of subjects from writing to welding, were limited in number specific to a subject area, and therefore did not address all the issues teachers faced. An example of this was referenced in the math teacher's

reflective journal, “As I’m working with rubrics I have a difficult time with how specific I should be—with math concepts (steps, etc.).” Brookhart’s (2013) example of a math problem-solving rubric shown in Table 5 was comprehensive and served as a useful guide in the process, but did not address specific criteria the teacher needed to assess various concepts. Therefore, the math teacher designed her own rubric (Table 6) based on the exemplar in the book (Table 5).

The math teacher expressed how the time factor involved in constructing rubrics like the ones represented in Tables 5 and 6 made it impractical to do for everyday assignments. In addition, she mentioned the extra time needed to construct rubrics written in student-friendly terms that took into account student differentiation based on ability level. Other teachers shared this concern as well. The social studies teacher suggested, “I think it would be helpful if I had a chart of key words that could be used for learning targets and rubrics.” In addition, the teachers suggested specific training on differentiation and how to incorporate the training into the assessment process without compromising the validity of the assessment. This brought up the concept of “compassionate validity,” a name the teachers and I created to describe the conflict of differentiating for ability level while maintain validity of the assessment, and the possibility of achieving it. The English teacher talked about her struggle in providing differentiation in the classroom as mandated by the State, while maintaining validity in classroom assessments that accurately articulated student achievement. She summarized her dilemma by stating that she wanted to meet the students at their level and challenge them appropriately in class, whether the students were at a high level or a very low level,

but she needed to be trained in how to properly differentiate assignments and align them to valid assessments, such as the rubric. Although the English teacher had students design a rubric in student-friendly language (Table 7) based on what she learned in the training, she noted in her field notes that she felt more comfortable using the criteria listed on a common rubric (Table 8) until she received more training. The social studies teacher echoed this feeling (see Appendix H for Social Studies Rubric).

The teachers acknowledged that their teacher/student constructed rubrics and the generic rubric they used did not necessarily meet the criteria for an effective rubric outlined in Brookhart (2013). Criteria such as scoring on neatness as listed on the social studies rubric (Appendix H) under "Diagrams & Illustrations," and scoring by counting up parts, like that listed under "Quality of Information" in Appendix H, are what Brookhart (2013) referred to as flaws. However, the teachers acknowledged that while they realized their rubrics were flawed, they felt that they were moving in the right direction as they had at least started using some type of rubric to formally assess students. In addition, the teachers agreed that creating flawless rubrics according to Brookhart's (2013) criteria might come with more training and practice.

Table 5

E*xemplar of a Math Problem-Solving Rubric in Student-Friendly Terms*

MATH PROBLEM-SOLVING RUBRIC

Score	**SHOWING MATH KNOWLEDGE** (Can you do the problem correctly?)	**USING PROBLEM-SOVLING STRATEGIES** (How do you solve the problem?)	**WRITING AN EXPLANATION** (Can you explain your work?)
5	I figure out the correct answer. I solve the problem with no mistakes.	I use all the important information from the problem. I show all the steps I used to solve the problem. I make a drawing/visual to show how I solved the problem.	I write <u>what</u> I did and <u>why</u> I did it. I explain each step of my work. I use math words and strategy names. I write the answer in complete sentences at the end of my explanation.
4	I figure out the correct answer. I solve the problem, but I make a few small mistakes.	I use most of the important information from the problem. I show most of the steps I used to solve the problem.	I write <u>what</u> I did and a little about <u>why</u> I did it. I explain <u>most</u> of my work.
3	I figure out part of the answer. I try to solve the problem, but I make some big mistakes.	I use some of the important information from the problem. I show some of the steps I used to solve the problem.	I write a little about <u>what</u> I did or <u>why</u> I did it, but not both. I explain <u>some</u> of my work.
2	I try to solve the problem, but I don't understand it.	I use very little important information from the problem. I show almost none of the steps I used to solve the problem.	I write something that doesn't make sense to the reader. I write an unclear answer.
1	I don't try to solve the problem.	I show no steps that I used to solve the problem.	I don't write anything to explain who I solved the problem.

Table 6

Teacher-Made Rubric: Graphing Line of Best Fit

Category	1	2	3	4
Data Table	Data in the table are not accurate and/or cannot be read.	Data in the table are accurate and easy to read.	Data in the table are organized, accurate, and easy to read.	Data in the table are well organized, accurate, and easy to read.
Labeling of X axis	The X axis is not labeled.	The X axis has a label.	The X axis has a clear label that describes the units used for the independent variable.	The X axis has a clear, neat label that describes the units used for the independent variable (e.g. days, months, participant's names).
Labeling of Y axis	The Y axis is not labeled.	The Y axis has a labeled.	The Y axis has a clear label that describes the units and the dependent variable (e.g. % of dog food eaten; degree of satisfaction)	The Y axis has a clear, neat label that describes the units and the dependent variable (e.g.% of dog food eaten; degree of satisfaction).
Accuracy of Plot	Points are not plotted correctly OR extra points were included.	All points are plotted correctly.	All points are plotted correctly and are easy to see.	All points are plotted correctly and are easy to see. A ruler is used to neatly connect the points or make the bars, if not using computerized graphing program
Accuracy of the Line of Best Fit	The equation of the line of best fit is not found.	An equation of the line of best fit is found, but doesn't fit the data	The equation of the line of best fit is found.	The equation of the line of best fit is clearly stated and fits the data.

Table 7

Student-Made Argumentative Essay Rubric

Categories	1	2	3	4
Outline	No outline provided.	Outline provided but no MLA format or citations nor organized logically.	Outline provided; not formatted correctly; contains citations and organized.	Outline provided with correct MLA format, citations, and organized logically.
Spelling, Punctuation, Grammar	Incorrect spelling and grammar. (Incorrect capitalizations run on sentences, etc.) (< 20). Does not use transition words, proper sentence structure, and professional language.	Frequent spelling or grammatical errors. (< 10) Optional transition words, proper sentence structure, and professional language.	Occasional spelling or grammatical errors. (> 5). May use transition words, proper sentence structure, and professional language.	No spelling or grammatical errors. Uses transition words, proper sentence structure, and professional language.
Introduction & Conclusion	No thesis present in either, lack of background information, or is completely lacking.	Thesis or conclusion is present, and is the only thing in the paragraph.	Thesis is present, with lack of sufficient background information, or of a strong conclusion.	Has a thesis and reworded thesis. In the intro, introduce your topic, state your side of the argument through the thesis, and sum up your topic through the conclusion.
Claims & Counterclaims	No claims or counterclaims provided. Arguments incorrectly formed.	Poor claims and counterclaims that do not support the argument.	Claims and counterclaims are provided along with pros and cons.	Claims and counterclaims are provided and explained. The pros and cons of each side are explained.

Table 7 *continued*

Organization	Essay is unorganized and does not flow in a logical manner.	Essay is somewhat organized but does not flow in a logical manner.	Essay is basically organized and flows in a logical manner.	Essay is perfectly organized and flows in a precise and logical manner.
Writing Style & Tone	Writing style is informal and biased.	Writing style is somewhat formal but biased.	Writing style is basically formal and objective.	Writing style is formal and the tone is objective.
Citations	Poorly formed Works Cited page, with no in-text citations.	Contains a Works Cited page with several errors, along with the in-text citations having errors.	Works Cited page with few errors, and in-text citations.	Properly formatted MLA format, with in-text citations.
Evidence & Examples	No evidence or examples are given in body paragraphs; no evidence is explained.	Evidence and examples are provided but not explained.	Evidence and examples are provided and explained moderately.	Accurate and precise evidence and examples are provided and explained thoroughly.
Format	Incorrect MLA formatted paper, with less than three body paragraphs, no introduction or conclusion, or not in correct stylization.	Not in MLA format, with less than three body paragraphs, yet most else is present. Less than ten errors in the formatting.	Semi-accurate format, not in the correct font, satisfactory amount of body paragraphs, no running head, etc. Less than five errors in the formatting.	Accurate MLA format. (12p font, Arial/Times New Roman, double space, three or more body paragraphs, introduction, conclusion, running head, page number, indentations, etc.)

Table 8

Generic Rubric: Common Core Argumentative Writing Rubric

	4	3	2	1
Introduction of claim	Claim is precise and knowledgeable; establishes the significance of the claim; distinguishes the claim from opposing claims; organizes claims and counterclaims effectively.	Claim is accurate; establishes the purpose of the claim; does not distinguish the claim from opposing claims; organizes claims and counterclaims moderately.	Claim is correct but not precise; establishes a basic significance of the claim; barely distinguishes the claim from opposing claims; barely organizes claims and counterclaims.	Claim is not precise; barely establishes the purpose of the claim; does not distinguish the claim from opposing claims; does not organize claims and counterclaims effectively.
Development of claim/ counterclaim	Development of claims and counterclaims are fair and thorough; supplies relevant evidence on claims and counterclaims.	Development of claims and counterclaims are at grade-level; supplies evidence on claims and counterclaims.	Development of claims and counterclaims are basic; supplies minimal evidence on claims and counterclaims.	Development of claims and counterclaims is nonexistent; supplies minimal to no evidence on claims and counterclaims.
Diction	Uses advanced words, phrases, and clauses as well as varied syntax to link together major sections of the text; creates cohesion; clarifies relationships between claims and reasons.	Uses grade-level words, phrases, and clauses as well as varied syntax to link together major sections of the text; basic cohesion; states relationships between claims and reasons.	Uses basic words, phrases, and clauses as well as varied syntax to link together major sections of the text; basic cohesion; tells relationships between claims and reasons.	Uses below grade- level words, phrases, clauses as well as varied syntax to link together major sections of the text; no cohesion; no clarification of relationships between claims and reasons.
Writing Style	Formal writing style and objective tone are kept throughout the text.	Formal writing style and biased tone kept throughout the text.	Informal writing style and biased tone kept throughout text.	Informal writing style and no tone kept throughout text.

Table 8 *continued*

Introduction/ Conclusion	Introduction is logical; conclusion follows from and supports the argument.	Introduction is logical; conclusion moderately follows from and supports the argument.	Introduction is vague; conclusion poorly follows from and supports the argument.	Introduction is illogical; conclusion does not follow from or support the argument.
In-Text Citation	Evidence is documented perfectly within the text.	Evidence is documented properly, but with minor mistakes.	Evidence is documented poorly with multiple mistakes.	Evidence is not documented.
Works Cited	Sources are documented perfectly.	Sources are documented moderately.	Sources are documented poorly.	Sources are not documented.

Cycle 3: The Method and Content of Feedback that Feeds Forward

The use of feedback by teachers, a component of formative assessment that provides students and teachers with information about how students are doing in relation to learning goals (Brookhart, 2008) met with limited practice. According to Brookhart (2008), feedback is personal, "It matches specific descriptions and suggestions with a particular student's work" (p. 1). Even though the teachers had an understanding of what feedback was as far as formative assessment, their use was limited to observing the look on students' faces to determine the level of engagement, or by asking broad questions such as "What did you learn today?"

Use and purpose. After the training on feedback, the English teacher acknowledged that she saw little change in her feedback, "I have always tried to give feedback by asking questions rather than telling the students, 'Oh, you need to change this.' I ask them, "Why did you put this here? How can this be changed?" A review of her evidences confirmed this statement. Nonetheless, a closer look at the teacher's work samples showed that over the course of the project she improved in consistency when giving effective feedback. For example, in the first work samples, the majority of feedback by the teacher was corrective. While there were several comments that probed the student to think deeper about their statement, or to expand their point, the teacher corrected the majority of grammatical errors throughout the draft. Improper punctuation was marked through with an "x" over the punctuation mark and the correct punctuation mark was inserted. A spelling error was marked with "sp" with the correct spelling written out to the side of the word. Inconsistent verb tenses such as "boys" and "was"

were circled and connected to each other by a line with the statement "2 doesn't match 1," referring to the student's sentence "…all the boys on the island was following…"

A work sample that was provided at the end of the project showed that while the English teacher still gave probing questions, the teacher improved in not providing corrected feedback for the students. She consistently circled misspelled words and marked the mistake with "sp" without making the spelling correction. Inconsistent verb tenses were circled and a line was drawn to correct them, but no other hint was given. Incorrect punctuation was circled or an arrow was drawn pointing to the punctuation, but the correct punctuation was not provided. For example, a student wrote,

> Papa Abuses Jaja and Kambili, Kambili is terrified of Papa and she did not know what to expect from him. Papa is a strict man who expects nothing less than perfection from his family. Nevertheless, Papa punishes his wife and children to correct their behavior, however sometimes he takes his authority to a limit.

The feedback from the English teacher placed a slash over the capital A in abuses. She wrote "CS" for comma splice over the comma between "Kambili"and "Kambili." The symbol ^ was written between the words "Papa" and "and," as well as between the words "however" and "sometimes." The word "did" and the comma after "behavior" were circled. The student's next draft read,

> Papa abuses Jaja and Kambili. Kambili is terrified of Papa, and she did not know what to expect from him. Papa is a strict man who expects nothing less than perfection from his family. Nevertheless, Papa punishes his wife and children to correct their behavior. However, sometimes he takes his authority to a limit.

In reviewing the work with the English teacher, she explained that she would have preferred the student to reword the second sentence as not to have "Kambili" written back to back. The verb tense of "did" should have been changed to "does," and she would have preferred for the student to place a semicolon before "however" rather than putting a period and starting a new sentence. However, overall she was pleased with the student's corrections.

The other teachers admitted that their feedback before the training was limited. The math and science teachers described their feedback as being a quick note with no explanation, or the graded marks on the paper. The science teacher explained, "A lot of my feedback was through testing. There was some verbal feedback but a lot of it was through grading. Right or wrong answers, but there wasn't much associated with content." Similarly, the math teacher also admitted that her feedback practice was limited,

> I would write a quick note, 'yes, this is the correct step, but you messed up here.' Or, 'look at this again,' just a quick note, no follow up on my part, just assuming that they would understand my quick note.

She continued by reflecting on her practice,

> Before when I was just saying 'this is wrong' or 'no,' without explanation, that can't be very helpful. They know they got it wrong, but they know they got it wrong because I put a big x on it. They don't know why they got it wrong.

While the math teacher confessed at the beginning of the study that her use of effective feedback was limited, a review of her evidence showed that by the end of the study the teacher had expanded feedback from placing a check or an x by the math problem to

circling wrong answers and asking reflective questions such as, “What is the rule when the exponent is raised to an exponent?” and “If you divide or multiply by a negative number, what happens to the inequality?” The math teacher admitted that this practice of providing effective feedback, “forced me to not focus on right and wrong answers, but in teaching the students the steps needed along the way.” Figures 5 - 8 is an example of feedback from the math teacher at the end of the study.

The problem: Which equation describes a line perpendicular to the line 2y=-6=3x?

Possible answers.

A. $y = -\frac{2}{3x} + 5$ B. $y - 2 = 3x$ C. y = 3/2x – 3 D. $3y = -9 + 2x$

Figure 5. Math teacher feedback sample. The student chose the answer by circling the letter C. The teacher placed an "X" on the letter "C" and circled the statement in the problem "…a line perpendicular to the line…" The student's first draft work is below with the corresponding feedback from the teacher.

Student work: $\frac{2y}{2} = \frac{-6+3}{2}$ Teacher comment: Good first step

$y = -3 + \frac{3}{2x}$

$y = \frac{3}{2x} - 3$ Teacher comment: Yes, this is the equation of the line in slope intercept form. What is the slope of this line?

Figure 6. Math teacher feedback sample. The student made the following correction and the teacher provided feedback.

Student correction: $y = \frac{3}{2x} - 3$ Teacher comment: How is that slope related to a perpendicular line?

Figure 7. Math teacher feedback sample. The student made the following correction and the teacher provided feedback.

Student Correction: Flip and change the sign $-\frac{2}{3}$ Teacher comment using math terminology: Yes! This is called the opposite reciprocal.

Figure 8. Math teacher feedback sample. The student changed the answer to the problem by circling the letter "A" and made the following correction; the teacher provided feedback incorporating the math terminology.

The social studies teacher also agreed that her practice of giving effective feedback was limited, "I would make the corrections myself; I'd write an alternate word or write a comma or a period, and I would give options for sentence structure." However, after the training she, as well as the other teachers, saw the purpose and value in proper use of feedback. The social studies teacher reported that since the training, "Now I just write 'WC' for word choice or 'SS' for sentence structure. I do not give them options; I don't make the corrections for them." For example, in reviewing the evidences from the social studies teacher, a student's paper written toward the end of this study had the following statement, "This is just like today anyone can be a police officer." The feedback provided by the teacher stated, "? Expand." The student then returned the paper with the following correction, "This is just like today almost anyone can be a police officer after completing training." In another example from that same piece of work, the student wrote,

> Well neuroscientist are actually trying to figure out people's thoughts because it could help figure out how to cure some diseases like Alzheimer's. This is almost like *1984*. They basically blinded everyone of everything they already knew (Piore, A. 2014). These are all reasons of how we are looking like we are on the verge of living in *1984.*

The teacher's feedback consisted of writing, "expand" after Alzheimer's, "¶" before "This," to symbolize new paragraph, "WC" for word choice after "blinded," and "SS" for sentence structure at the end of the sentence. The student's corrections were as follows,

> Well neuroscientists are actually trying to figure out people's thoughts because it could help figure out how to cure some diseases like Alzheimer's. According to

> CNN there are new studies showing this kind of thought police may be possible relatively soon. This is almost like *1984*. They basically blinded everyone of everything they already knew (Piore, A. 2014). The government's manipulation would convince party members that their memories were false. These are all reasons why we look like we are on the verge of living in *1984.*

The English teacher also supported this idea of giving the students "a hint" by providing a symbol or asking a question. For instance, instead of placing a comma in the appropriate place, she provided feedback that asked, "What punctuation belongs here?" Or, if a comma is inappropriately placed she asked, "What is a better punctuation mark to be used here?" All the teachers talked about how they realized the value in providing students with options to fixing their mistakes rather than placing a check or an x beside the problem indicating whether it was right or wrong, or by correcting their work for them. Emphasizing how this process made the students more self-directed, the math teacher said, "Now, I ask them a question that directs them to a certain set of notes, or to the book. This makes them self-directed as they have come to seek out the solution on their own." In essence, the students showed evidence of becoming life-long learners, learning not only the content of a particular academic course, but also a process for mastering an academic discipline. And, teachers were becoming facilitators of learning rather than merely purveyors of academic content.

The teachers made several comments about the positive outcomes they experienced using feedback in the classroom. The social studies teacher noticed a marked improvement in students' analytical skills, "I still have to correct a lot of grammar and sentence structure, but their analytical sentences and their explanation sentences have

improved." She also noticed that peer feedback also improved as the students mirrored the teacher's comments. She explained, "My favorite feedback phrase to write is 'so what?' and 'expand.' Now, the students write those words when they are doing peer edits." In addition, the social studies teacher spoke of how feedback helped her build relationships with students,

> I think that writing feedback is fun. I can write a smiley face next to something the student has written and they know, 'That was a good thought.' That is also a way that students will get to know my personality, too. It's a way to build relationships one-on-one even though it isn't verbal. I like watching their faces when they read it. They look through their papers and they're like, 'Oh, she liked that part.' There is obviously relationship building in class with verbal feedback but written feedback gives you an opportunity to make the student feel special. That's why I don't do all my feedback electronically, handwritten feedback is more personal.

The math teacher commented similarly about how feedback enhanced relationships by opening communication. "Feedback has opened communication for me and allowed for more conversation to happen between myself and the kids." The English teacher agreed, "Feedback allows you to communicate your expectations to the students. They know what you want and what you want to see." The science teacher concurred, "The students know exactly what I expect when I give feedback," elaborating, "I always push the students to ask questions, to think outside 'yes' or 'no' and ask 'why?' to cognitively explain the answer." This practice helped the teacher to "Get a better picture of what students understand." He reported that feedback revealed the gaps in student learning and

provided him with the opportunity to fill in those gaps, which has improved academic achievement in the classroom.

Articulation of student achievement. Again, all the teachers spoke of the documentation from written feedback as proof of student achievement. For instance, the English teacher referred to the feedback she provided on writing assignment drafts. Whether the drafts were peer edited or edited by the teacher, the teacher explained,

> If there is a question about the grade the student received, I lay all the drafts out and explain to the student, 'here are your mistakes in the first draft, here are your mistakes in the second draft. Here is your final draft; and as you can see you didn't make the corrections necessary to pass the assignment.

The teacher continued to explain how the feedback in the drafts showed the progression of the student's work and how it led to the final performance grade, but then she paused. Reflecting on her practice, she expressed how she had not considered juxtaposing the drafts with the rubric to explain the performance grade given, which would articulate more clearly the student's achievement, "I should have offered to show the student's drafts and compare it to the requirements in the rubric. I didn't, but I see now that I should."

The social studies teacher concurred with the idea of feedback on drafts serving as documentation. "I keep the draft, and if I wrote 'expand' on the draft and in the final draft they didn't expand, then they knew why they didn't get a higher grade." She admitted, "That has helped me immensely, and it's gotten me out of some situations that I probably wouldn't have done so well in without the feedback on the drafts." The teacher continued

by expressing the value of feedback when communicating with parents, “I could see that really paying off for teachers when dealing with parents.”

The math teacher recounted how feedback helped to “connect the dots and make sure that those connections made a week ago are still there.” She explained, “I can refer a student who is having a problem back to a previous assignment and say, “ok, this is what you did and this is how you fixed it.” She continued, “My hope would be that when the students are studying or working on problems they will go back and look at that feedback; hopefully it will serve as another resource for them.”

The social studies teacher also discussed that her goal was for students to improve by using feedback as a resource that brings awareness to their writing trends,

> I think it is fun for students to compare and start recognizing that there is a trend in their writing. I like it when they can look back at my comments from their last essay and compare it to the next one, and they’re like ‘oh yeah, you said the same thing last time!’ Hopefully, by the third draft they’ll move past that. That’s usually our goal, to count up what I said the most, whether it’s ‘expand’ or ‘sentence structure’ and try not to get any of those comments on the final draft.

The English teacher agreed that feedback is a good resource in making students aware of their writing trends, “Feedback is a great teaching tool. When students see multiple marks around their punctuation that are repeated throughout the paper, I would hope that they’d say, ‘I keep doing this, how do I fix it?’”

Challenges. Two main challenges with giving feedback emerged for all the teachers: time and content. The social studies and English teachers spoke about the time it took to give proper feedback on draft assignments. The English teacher explained,

> I only do two drafts because that is all I have time for. I would love to do more, but there's not enough time. I mean, it takes at least a day to give feedback, and that is with my small classes, then you give it back to them so they can have another day to work on corrections, and turn it in again. The cycle continues one more time before the final draft is due. I think maybe once they got into the rhythm of it, it could go a little faster, but I don't think we are there yet.

The social studies teacher echoed that time is a factor when trying to provide effective feedback, but she admitted that peer editing and oral feedback in class help with the issue of time, "As long as I give time in class to work on drafts then I can answer a lot of the main questions in class, which reduces the amount of handwritten corrections that I have to make on drafts." She continued,

> We generally have two drafts, well, a draft and then a final copy. I usually give the students a week to work on their paper. During that time I have two peer editing sessions and then a formal feedback session the students have with me.

However, even though peer editing helped to save the teacher time, both the social studies and English teachers admitted that peer editing presented a separate issue. If the class consisted of various ability levels, partnering or grouping students to peer edit so that all achievement levels receive effective feedback is important. The English teacher described how she handled this situation,

> Something that I have learned is to try and group the students based on ability level when we are doing peer editing. If you don't then you will have a low level student benefiting from the peer editing but the high level student will not.

The social studies teacher concurred, but grouped students differently,

> I group based on academic levels. I have three students in a group and I try to have a low, middle, and high ability level in one group. Each member is responsible for providing feedback to the other two in the group. But, because the highest achieving member of the group won't receive as effective feedback from the other group members, I always make special notes on their paper. I make sure I give them more from myself to help them improve.

The other challenge mentioned was the idea of content. All the teachers agreed that the feedback content learned in the training was overwhelming and while they have embraced the use of feedback in the classroom, they admitted that knowing which feedback strategy to use was a skill that took time and practice to learn. Brookhart (2008) acknowledged that the hardest decision to make when giving feedback is the amount to provide. The English teacher expressed her frustration,

> My frustration is trying to figure out how detailed to be with feedback. Some students want a lot of detailed feedback and have the ability to handle it. But, some students get overwhelmed, frustrated and discouraged if you give them too much feedback. It's hard to determine the amount of detail to give that is effective but not overwhelming.

All teachers agreed with the value of feedback and the critical role it plays in the learning and assessment process. However, they expressed their need to continue to work with this formative assessment strategy beyond the term of the project. When the teachers were asked if they saw academic improvement from providing feedback on student work, the social studies, science and English teachers agreed that they had seen substantial growth in the middle and upper level students but the lower level students had only

shown little growth; however, the social studies teacher was quick to point out that this was the first semester she had implemented the strategy and that continued use may show more improvement.

The teachers also recommended an in-depth training on how to teach students to give and receive feedback. The English teacher suggested that a school-wide implementation would be helpful as the students would be exposed early in elementary school to the proper way to give and receive feedback. She also proposed that teaching peer editing by incorporating it in your daily lesson plans would be beneficial. The social studies teacher agreed with these ideas but added the importance of modeling these strategies before implementing them in the classroom,

> I would not introduce peer-editing too early. I do all the feedback at first, which is very time consuming. But, I think that until the students feel that the classroom environment is secure, safe, and respectful, then it is dangerous to have peer feedback. I like to set the example first of what I would expect when giving feedback.

Cycle 4: Goal Setting, Self-Assessment, and Strategic Questioning

According to Moss and Brookhart (2009), student goal setting and self-assessment are self-regulated activities that empower students by putting them in control of their own learning. Strategic questions support these activities by helping "students learn where they are, where they are headed, and how to take the next best steps in the learning journey" (Moss & Brookhart, 2009, p. 113). During this cycle, teachers worked with students in how to set goals to achieve their learning targets, and self-assess through strategic questions that promoted formative discourse (Moss & Brookhart, 2009).

Use and Purpose. All the teachers admitted that before the training their use of goal setting, self-assessment, and strategic questioning was non-existent or very limited. The math teacher said,

> I didn't do a lot of self-assessment at all, and I don't know that I really had them setting any goals; it was more me telling them what they needed to do, 'This is what you need to do, now go do it.' The students didn't have any ownership.

The English teacher also spoke of general verbal statements that were teacher directed concerning goals, "I would say, 'the assignment is due on this day, you need to pace yourself to get it done this day,' or 'It needs to be done by the end of class.'"

The science teacher was limited in his use of goal setting, self-assessment, and strategic questions as far as these strategies being student directed. He admitted that before the training all these strategies were teacher directed,

> I feel like a lot of my goals before the training kind of went along with the wording that I saw on the standard course of study for the class. It left a lot open as far as the goals, I mean, it was pretty broad, no plan of attack.

He agreed with the issue of student accountability mentioned previously by the math teacher, "Before I did SMART goals, but I really didn't have students do goals associated with specifics, so, there wasn't really a self-assessment, so, there wasn't really much ownership on the students' part." In addition, he admitted that before the training, his use of strategic questioning was teacher directed, "I feel like I asked some higher order thinking questions, but it wasn't a conscious…it wasn't something I focused on, it was kind of just looking for feedback, asking questions like, 'Did you understand?'"

The social studies teacher recalled the infrequency in her use of goal setting, self-assessment, and strategic questioning, "I did not ever have them set formal goals, and they did some self-assessment, but it was very infrequent." When asked about strategic questioning, the teacher admitted that before the training she would ask questions, "After students were given the information." She explained,

> We were trying to process it before we applied it, and then we would ask higher order thinking questions after we applied it. For example, if they got it wrong, 'how do you fix it?' But, usually I was asking the higher order thinking questions and they were just responding and their responses were not what I thought they should be…ever.

When asked whether she would probe for more in-depth answers, she said, "Yes, very, very frequently and if the student didn't get it I'd just move on immediately to another student."

Since the training, all of the teachers admitted that goal setting, self-assessment, and strategic questioning are now a daily part of their routine. In explaining the importance and process of incorporating these strategies in the classroom, the math teacher explained,

> I think that self-assessment stems directly from, and is very important to, the learning targets, so just in using this training and implementing it I've realized how important the target is for the students to be able to self-assess and that's been key for me. And then the self-assessment, I think, is a good thing for them to focus on, as opposed to just the grade. Instead of, 'Ok, well, am I making an A or am I making a B?' it's 'How am I getting there?'

When the math teacher was asked how she implemented the process in class, she explained,

> At the beginning of class we have a discussion about the learning target on the board and I ask, 'Ok what do you know and what do you need to know in order to learn the learning target?' At the end of the lesson for an exit slip I ask, 'Ok, what have you learned?' We have a content sheet that we keep up with in their notebook that has the leaning target for each day. I didn't do this at the beginning but I came across it recently, where I have them self-assess on each learning target with a one, two, or three; 'I get it,' 'I need help,' 'I'm completely lost.' So I can assess where they are by looking at their self-assessment on their content sheet.

She highlighted how these strategies provided encouragement and student ownership of their learning saying,

> I think they have a better chance of ownership, they can see their progress a little more, looking at that content sheet and saying, 'Well, I really didn't understand these things, but the next week I got everything,' so, maybe, hopefully it'll encourage them as well.

Although the math teacher did not reference peer editing in the feedback portion of this project, she did discuss its value in relationship to self-assessment,

> It's not self-assessment, but I'll have them edit each other's work. I have found that it's helpful in self-assessment when they're having to look at someone else's work, so they're having to follow each step, and they can see where they messed up, or see, 'Oh, I didn't do this step when I worked the problem.' So, self-

> assessment has been great, but also assessing each other has been really helpful and I've seen a lot of good things, light bulbs go off.

The science teacher also agreed that these strategies are, "Something I use on a daily basis. It has become almost a habit in the way to ask questions in class." He, too, linked goal setting to the learning target, "Providing the learning target at the beginning of class lets the students know what they will be learning about, this guides them in their goal setting and self-assessment." He explained that goal setting, based on the learning target, was not difficult for the students to grasp. However, even though the students were able to grasp the concept of self-assessing, getting them to self-assess using strategic questioning was a challenge,

> Sometimes self-assessment is the hardest part to get them to do because, you know, it's easy to get them to self-assess and to ask higher order thinking questions, but to get them to self-assess using higher order thinking is difficult. Not that they aren't doing it, but it requires more effort on their part.

When asked to elaborate on this challenge, he recounted,

> This is a problem I am having with all my students in general. Instead of thinking in black or white, 'I did learn this,' or 'I didn't,' I want them to understand that I want to know where they are on the spectrum, 'To what extent did I learn it?' I want them to think about it as if they started at zero and worked their way up to ten, as far as their level of knowledge, how much do you understand it. Instead of saying, 'Yes, I learned it,' it's, 'To what extent did you learn it?'"

The social studies teacher explained how implementing the strategies acquired from the training provided in this study changed her way of assessing student progress.

> As I said before, if a student didn't know the answer to my question I would immediately move on, but now I know that if a student doesn't get it you help them reach it without moving on to someone else, you help that individual student reach it. And, goal setting, we set goals for every lesson — which is usually daily. Self-assessment, it's not daily, but like twice a week we self-assess, and then they always self-assess formally, that is written or turned in to me about once a month. The every other day self-assessments are less formal, more like reflections.

When I asked the English teacher to explain how the implementation of these strategies went after the training, she discussed the lack of readiness by students to take ownership in setting goals, self-assessing, and asking or answering strategic questions, "I don't think these strategies are student-driven. I don't think they're in the mindset to do that, or, I don't know that they have the desire to do that, well, some actually want to but others don't."

Even though the English teacher did not feel her students were in the mindset to take ownership of their learning, she discussed how she had changed her practice in asking students strategic questions in order to improve her own assessment of their learning,

> With the strategic questioning, higher order thinking, I try to make sure the exit ticket questions are not just recall questions. If we have a class discussion, or they have discussion questions that they're doing, I try to always make them higher order thinking. I try to use the high level of Bloom's Taxonomy where they have to defend, or they have to create, and I always try to assess if they've reached all

the way to the highest point on the taxonomy or show me that they've learned something.

She also emphasized that although there was a lack of knowledge or lack of motivation on behalf of her students in setting goals, self-assessing, and/or asking strategic questions, the practice encouraged student ownership in that, "It lets the student figure out where they are before anyone else." However, the need to train students in how to implement these skills on their own as a way to improve and take ownership of their work was a prevalent theme among all the teachers. This issue of training students how to implement these skills will be addressed in the challenge and suggestion sections of this cycle.

Articulation of student achievement. According to Moss and Brookhart (2009), student self-assessment is not for a grade, but rather an opportunity for students to review their work to assess their progress and identify their strengths and weaknesses. Therefore, the effect self-assessment has on articulating student achievement is not concerned with the grade per se, but rather with bringing awareness to the students about where they are in the learning process. The responses by all the teachers, when asked about self-assessment and how it articulated student achievement, supported the idea of student awareness. However, the teachers questioned students' level of awareness because of the inconsistency in the teacher's assessment of the students' work and that of the students' self-assessment. Interestingly, the math teacher reported that her students assessed themselves at the same level she did or below. However, the science, social studies, and English teacher all reported that their students assessed themselves at a higher level than the teacher did. The English teacher stated,

> I think the students think they're better than what they are, because they read the rubric and they think, 'oh yeah, I've done that.' But, it's not exactly at the level that it needs to be, although in their mind they think that it is.

The science teacher concurred with the optimism of students in their self-assessment, "They are usually extremely optimistic about what they have learned. They'll say, 'Yes, I learned it,' but when you ask them a strategic question that requires them to explain what they have learned, they have problems."

The social studies teacher reported a percentage of accuracy, "I'd say about 60% of students' self-assessments were accurate to mine, 10% were way off — higher. I always explain to them why they were way off, we discuss it, and the next assessment they're still way off." She continued,

> I think the 10% that were way off are stubborn and I don't think they're putting that much thought into it. Of the 60% that were accurate, I would say 30% of them struggle with self-esteem and confidence, and they graded themselves lower automatically.

This sentiment is mirrored by the math teacher who said her students assessed themselves, "below to accurate." She continued by expanding on her use of student self-assessment as feedback data used to clarify and improve her learning targets,

> I think that student self-assessment gives me an opportunity to have more data to look at, it provides me more information, more responses from the students, so then I can change my lesson plans, or change plans for the next day. It guides me along the way.

This statement corroborated the idea by Moss and Brookhart (2009) that in order for students to self-assess well, learning targets and criteria for assessment needed to be clearly understood.

Overall, the teachers were very positive about these strategies and that incorporating them in their daily routine helped to increase academic awareness, increase academic rigor, and increase academic growth. For example, the math teacher reflected, "I find myself saying, 'Why?' a lot, and 'Why" again, to get the students to go deeper and deeper." When asked if this was her way of getting the students to explain where they were in their thought process, she confirmed,

> That's correct, I feel like sometimes that's all I say. I think it allows them to think about the 'why?' not just when they get the test back and it's a one, but throughout the lesson, just assessing 'Ok, why here? Why is this true? How do I know this?'

The social studies teacher focused on self-assessment as a positive strategy in elevating the academic rigor in the classroom, "I think self-assessment is one of the best parts of this." She continued,

> I think the strategic questions the students ask me now are more rigorous. Their curiosity has been heightened and they now know the types of questions they should be asking. It's coming out naturally, they're not asking it for brownie points, they really are wondering.

She noted that although she has not seen a huge difference in about half the class in higher order thinking, the other half of the class has shown remarkable difference in

thinking deeper. In addition, she said that just about all of her students are taking more ownership of their learning through this process.

The English teacher expanded on the positive outcomes by including all three strategies in her response,

> The goal setting keeps the students on pace to reach the learning target. The strategic questioning, I think, has made them deeper thinkers instead of relying on someone else, or sitting back and riding the coattails of people. I've seen them grow as students just since the training. Their interviews are more in-depth and they're more complex in their thinking than what they used to be before they started practicing thinking this way.

Challenges. There were many challenges mentioned throughout the interviews concerning goal setting, self-assessment, and strategic questioning. The main theme that emerged was time — the time involved in teaching students how to use the strategies, and the time it took for students to incorporate the strategies into their learning process. The English teacher explained,

> This is a new concept and I know for me it's not a consistent way that I do things, but I am working on changing. I think the more I consistently implement these strategies in my daily routine the better it will be. And, maybe further along in the semester it will become clear to the students how to use these strategies. But, it takes time to teach the students how to use these strategies and it takes even more time for them to use them.

The other challenge mentioned was the inability to motivate students to take ownership of their learning using these student-directed strategies. All the teachers agreed

that the lack of motivation, or laziness among some students was a huge obstacle in trying to get students to use student-directed strategies in the learning process. The social studies teacher explained, "If they're feeling too lazy that day to even set a goal, they're not going to be engaged in the lesson, or in self-assessing or asking strategic questions." The science teacher agreed,

> Motivation is one of the biggest challenges I face. Setting goals, self-assessing, and asking strategic questions take creativity and effort, and motivating a student at eight o'clock in the morning to take control of their education, I would say, is probably my biggest challenge.

To better address these challenges, the teachers suggested the need for more training. However, the training suggestion was specific to training teachers how to teach students to set goals based on the learning target, accurately self-assess where they are in the learning process, and provide techniques used to ask strategic questions. The social studies teacher explained, "I know what these concepts are, but I need more training in how to teach these concepts to kids, not necessarily more training for us except on how to transfer the information to the kids." She continued,

> Every time we talk about the inconsistency in their assessment compared to mine they seem to really understand why I graded them the way I did, but on the next assessment they are way off. So, I think I need some more training on teaching students how to self-assess accurately.

The science teacher agreed,

> I feel like these concepts, such as higher order thinking questions, take creativity and that does not come easy to teenage students. I feel like it's definitely an adult

> concept we're incorporating and they may not be ready for that. We need to be trained in how to incorporate these skills from the beginning.

In addition to training, the social studies teacher felt like a lot of the issues incorporating these new strategies were related to the fact that the strategies were new to both students and the teacher, and that continued implementation in the classroom would alleviate some of the issues. She explained,

> These concepts are so new to them. I think once I have a kid the whole year it'll be a lot easier for them. I think we are just in the beginning stages and they're just getting used to it.

The English teacher agreed, "A lot of it is patience and practice." She continued,

> I think self-assessment needs to happen every single time and then maybe they'll start to internalize it, and be able to self-check with it. When it becomes routine, they know what to expect, and then they can start internalizing it. I think this is the same with strategic questioning.

In reflecting on their practice implementing these strategies in the classroom, all the teachers agreed that more practice would help them as well. The math teacher explained,

> I have a hard time trying not to lead the students when I ask higher order thinking questions. I try to get them to think about 'why' on their own, but so many times I feel like I'm leading them, they know the answer just by how I'm asking the question. So, I need to learn to be very specific, almost to the point where I'm planning out the questions while I plan my lesson.

The math teacher continued to reflect,

> Another thing I've read, which I haven't done, is have them assess their math work with a constructive response. For example, they would answer the math problem and then they would have to explain 'Why?' I think that would be neat, something I want to do. For me as an educator it's up to me to plan ahead more, think about the questions I need to ask to guide them. It's up to me to see steps along the way as opposed to, 'here is where I start, and here's where they're going to end,' but include, 'how are they going to get there?'

In order to reach this point, the math teacher emphasized the important role the teacher played in helping the student to look beyond the teacher as their only resource, to be self-directed and refer to a textbook, fellow classmates, or online resources. She also expressed the importance of providing suggestions to students using higher order thinking questions, rather than, "This is right, this is wrong," or, telling the student "This is how you do it." The suggestions, or feedback provided by the teacher should leave them thinking more deeply about 'why?' She confessed that she is not very good at following this suggestion, and again the concept of more training emerged, "I don't know. I'm not very good at it yet. It takes lots of practice, and lots of training. I'm not sure how it will pan out but I see that's what's needed."

The English teacher reflected on her struggles implementing a new concept and how more practice implementing the strategies would help,

> The problems I had implementing the concepts were probably my fault. I'm soft-hearted. I know I need to be stricter and stick to the process because it doesn't do them any good to think their work is a four when it is a two.

She expanded on this thought,

> I think somehow we need to get them to see themselves where they are and not grade themselves higher. They all want fours but some of them are not there yet, and we need to work on helping them see how to reach their goal.

When I asked her if she is able to explain to the students why they are not at the level they perceive themselves to be, she explained,

> Learning targets tell them what they're going to be assessed on, and with the rubrics they know how they are going to be assessed so the students at least know 'I thought I was here, but apparently I wasn't.' You can explain why by showing them the learning target and the rubric but whether they actually internalize it and think about it, that's a different story.

She continued by emphasizing the need for more training to teach students how to better use these strategies to reach their goals, and the need to consistently implement the strategies in the classroom every single day, "All these strategies would fall into place and help students be successful, but it would take them being implemented every single day for it to happen."

The social studies teacher also reflected on her trial and error process implementing these strategies in the classroom,

> At first I didn't have the students write their strategic questions down for me to approve them. So, they would ask a question that I didn't approve, and it looked like that was the model. I was like 'Oh, no! Everyone else thinks that's an acceptable strategic question when it's not.'

She continued by emphasizing the importance of teaching the strategies to students first, before you ask them to apply it in the classroom, and giving them time to learn the

strategy. She explained, “I wasn’t giving them enough time at first. If I want them to do it well I have to show it to the class as a model, but it takes time and that’s an obstacle.”

Teachers’ Suggestions for Implementation

For the teachers to become critical consumers of theory and use their voice to advocate for practical solutions that bridge the gap between theory and practice, they were asked to construct their own theories by offering suggestions through each cycle of the inquiry. Although the experience was positive on the whole, there were several challenges that the teachers had to overcome. The two main challenges that emerged throughout every cycle was the need for more training and time. Never having been exposed to a classroom assessment course in their undergraduate or graduate work, and only having been introduced to recommended practices implemented in the study the semester prior to beginning the project, all teachers recognized the need for more in-depth continuous professional development and the time to implement the strategies with fidelity. This suggestion was consistent with the research (Brookhart, 1994; Guskey, 2004, 2006; Stiggins, 1999; Stiggins & Bridgeford, 1985) that teachers do not receive enough training in classroom assessment strategies. In every interview, each teacher mentioned, at least once, the need for more training in the strategies and more time for implementation. The social studies teacher corroborated the research, “Definitely more training. After the training I was thinking I was doing it right, and then after discussing it with other teachers I was like, ‘oh, no, I don’t think I am.’” She noted that the training needed to be ongoing throughout the year with content specific examples provided to teachers; and where samples of the teacher’s work was turned in to someone who was an expert in the strategy, and who could provide ongoing feedback.

This suggestion was supported by Black and Wiliam (1998) who reported the lack of training in classroom assessment strategies that teachers received in pre-service education programs and professional development workshops. They suggested that these programs and trainings should place greater emphasis on effective classroom assessment practices. Noting a "poverty of practice" (p. 141), Black and Wiliam (1998) reported that despite the known instructional impact, teachers still did not effectively use classroom assessments to accurately articulate student achievement. The teachers do not deny that they have neglected to make practical application of the recommendation by measurement specialists; however, they asserted that while the recommendations were well documented, the apparent assumption on the part of the measurement specialists is that their published and well-documented research makes its way into district or building level professional development. Hence, the lack of teacher accessibility to training on effective classroom assessments via teacher training programs or professional development in a school or district appeared to be the largest barriers to closing the gap between theory and practice. The teachers contended that while researched-based assessment strategies are well-published, the assumption that teachers are not implementing them in the classroom for any reason other than lack of knowledge or accessibility is an unjust and false assumption. They suggest that exposure to the research is not enough to effectively implement the strategies in the classroom. In-depth, ongoing training focused on these strategies, and time to effectively use these assessments to drive instruction that improve student achievement are critical to the success of any researched based theory when implemented in the Pre-Kindergarten -12 grade classroom.

In a sense what the teacher were asking for from measurement specialists are the same things the measurement specialists are recommending teachers provide students: To not make assumptions about background knowledge on assessment practices, to provide clear learning targets in proper use and purpose of the assessment strategies, and to provide content specific rubrics and exemplars to guide the learning.

The research by Black and Wiliam (1998), Stiggins (1999), Stiggins and Chappuis (2005) supported the idea that many teachers lack the training necessary to foster lasting changes in classroom assessment practice. They asserted that teachers need exposure to the research that supports effective classroom practice, exemplars of what good practice looks like in the classroom, and training on how to use assessment-derived data to adjust and differentiate instruction in the classroom.

Chappuis (2009) offered teachers strategies to assess for learning that discussed the basic differences between formative and summative assessment, demonstrated how learning targets guide instruction, modeled effective feedback, provided guidelines for teaching student goal setting and self-assessment, and provided a reflective process for helping students take ownership of their learning. Chappuis (2009) also asserted that if teachers communicated with students through learning targets, effective feedback, and reflection, then students would assume responsibility for, and take ownership of, their work.

The statements from the teachers supported the statements by Chappuis (2009); however, the teachers note that the only reason they have knowledge of these strategies is because Chappuis (2009) was provided to them as a resource for this project. Under any other circumstances they would not have been familiar with Chappuis' work.

Furthermore, the teachers add that this is the case with recommendations and practices from Brookhart (2008, 2013); Chappuis, Stiggins, Chappuis, and Arter (2012); Marzano (2009, 2010); Marzano and Pickering (2011); McTighe and Wiggins (2013); Moss and Brookhart (2009, 2012); Popham (2008); and Wiliam (2011). Therefore, a step to closing the gap between theory and practice would be for schools and districts to provide teachers better access to training and resources in classroom assessment strategies by measurement specialists

Speaking to a school-wide training, the English teacher suggested taking the training and implementation in stages. For instance, the elementary and middle school teachers who taught multiple subjects or possibly multiple grades would have one subject on which to focus. She suggested,

> Because they are brand new to it, you would say, 'For the first nine weeks, you need to have a learning target for one class or one subject you teach.' You wouldn't want them to be freaking out because you have to have twelve learning targets for all twelve classes you teach.

She said that the four teachers in this study would observe other teachers implementing the strategies, and offer suggestions and feedback based on their experience they received in working on this project. The social studies teacher also suggested the training be in stages,

> What would be beneficial is to be trained in the strategy, and then we would submit work samples for approval that are based on the lesson that is planned, and then get feedback. Then spend another couple of weeks on another strategy,

> submitting work and getting approval and feedback, and then move on to another strategy.

These statements concerning the importance of providing training in stages is consistent with Wiliam (2011),

> When teachers try to change more than two or three things about their teaching at the same time, the typical result is that their teaching deteriorates and they go back to doing what they were doing before. (p. 161)

Wiliam (2011) advised that each teacher choose one or two techniques to try out in the classroom with "the goal to be to practice them until they become second nature" (p. 161).

In addition to the need for ongoing training, this suggestion also spoke to the challenge of having enough time to implement the strategy effectively in the classroom. Constructing, aligning, and using learning targets and formative assessments take time. However, the teachers were speaking more about the concept of time for training and practice needed to hone their own skills in implementing the new strategies before being able to fairly assess the extent of the effectiveness. The teachers agreed that having the training in the spring of 2014 proved beneficial. This gave them the summer to organize and plan for the upcoming school year. While they agreed that their continued use of the strategy would improve their instruction, they emphasized that providing ongoing staff development throughout the year to reinforce the implementation of new strategies was good practice. In addition, the social studies teacher suggested that training resources be made available electronically. While the books used in the training were helpful, the social studies teacher stated, "I don't carry them with me all the time." She explained, "I

do a lot in the evenings, and I just don't carry, or want to carry them home. So, some sort of digital format would be good."

Bringing the two suggestions together, all the teachers recommended providing more resources and training that gave teachers content-specific examples of learning targets aligned to formative assessments. While the books used in the training (Brookhart, 2008, 2013; Chappuis, 2009; Chappuis, Stiggins, Chappuis, & Arter, 2012; Marzano, 2009, 2010; Marzano & Pickering, 2011; McTighe & Wiggins, 2013; Moss & Brookhart, 2009, 2012; Popham, 2008; Wiliam, 2011) offered numerous examples, the teachers preferred to have resources that were dedicated specifically to their content area. While they acknowledged that this was probably not practical from a measurement specialist's viewpoint, they said that having a resource that provided several more examples would be helpful. The teachers were very knowledgeable in their content area, but they found assessment tasks such as constructing and aligning learning targets in student language time consuming and daunting. Therefore, although knowledgeable, the teachers asserted that their knowledge was focused on their content area not classroom assessment. Hence, without training by the experts, or at least someone knowledgeable in the field of assessment, the ability of teachers to implement the recommended classroom assessment strategies with fidelity is limited at best. To quote the English teacher, "I'm not a measurement specialist, I don't know."

Final Interview: Teachers' Overall Experiences

The final interview was conducted after the conclusion of the semester in January, 2015. The teachers faced several challenges, but their overall experience was positive. All four teachers said they would continue implementing these strategies in their

classroom, even if they were to leave their present teaching position to teach at another school. The science teacher stated, “I feel like it would be successful anywhere you taught it.” The English teacher agreed, “I feel like it is a whole lot easier than what people make it out to be. It’s not something to stress and fret over; you just learn how to do it and that will be that.” The math teacher reported how chaotic she feels the classroom environment would be if she stopped implementing these strategies,

> I’m not sure I would feel I had a direction, I would just teach from the next lesson to the next lesson to the next lesson. This gives me more of a purpose; I think that’s true for the students as well, because they can see those learning targets connecting and building on to each other.

Themes emerged as teachers discussed their overall experience and how their classroom assessment practices had changed as a result of this study. All teachers discussed how strategies in each of the four cycles opened communication and provided organization and focus for students and teacher. The math teacher said of the learning targets (Cycle 1), “It just opened up communication at the end of class to allow us to talk about how the learning target related to yesterday’s, and last week’s learning target, and where it is leading us to in the future.” The English teacher agreed, “They give you direction, they give students direction on what’s being done, and the teacher direction on the direction to take the lesson or unit.” The social studies teacher also responded, “It helped me organize a lot better for class. It made the actual class time flow, with more structure for the kids.”

The same themes also emerged with rubrics (Cycle 2). According to the social studies teacher, rubrics were “The best thing ever. They provide clear expectations.” The

English teacher also reported, “They show students exactly what is expected of them at each level.” The math teacher referred to rubrics as a roadmap, and the science teacher admitted that rubrics, “Definitely help the students know what they are supposed to do.”

In Cycle 3, feedback, the teachers agreed that feedback improved communication. The math teacher said, “Feedback opened up communication for me. After the students received the feedback we would talk about where they are and how to get to where they need to be.” The English teacher also mentioned feedback as a way to reevaluate student work, “Feedback helps students grow, it’s not saying ‘Oh, you failed this,’ and that’s it. It gives them an opportunity to reevaluate what they did and hopefully make it better.” The social studies and science teacher teachers expanded on student improvement through feedback and spoke of how the feedback helped students improve their writing skills and comprehension.

Despite the fact that Cycle 4 presented the most challenges as goal setting, self-assessment, and strategic questioning are student-driven strategies and not in the realm of control for teachers, all the teachers agreed that this cycle gave students ownership and accountability of their learning. The English teacher explained, “It teaches students to think and it teaches them to take ownership of their learning.” Both the math and social studies teacher acknowledge the difficulty of teaching students these strategies. However, the math teacher spoke about how these practices led to more detailed and intentional planning on her part and the social studies teacher spoke of student improvement, “Their ability to infer and analyze has increased tremendously, which is helpful on the state exam, but it is also making their writing better because it’s not just regurgitating back information.”

Summary

Theoretical researchers in the field of measurement advocating effective classroom assessment practices have chastised teachers for years for not implementing many of their research-based assessment practices in the classroom. The comments, reflective thoughts, and suggestions shared by teachers based on their experiences in implementing formative assessment, provided insight into several of the issues that affect the practical application of research into the classroom. Their comments offer ways to close the gap between theory and practice. One common theme that emerged from the interviews was that teachers need in-depth and ongoing training in these practices in order for them to implement the strategies with fidelity. Most important, they need the time to train and have conversations with their peers that does not detract from day to day teaching duties. More time is also needed to allow teachers at different grade levels and in different schools to adapt the formative instructional and evaluative processes to the context and culture of the schools in which they teach. As the science teacher said when asked why teachers are not implementing these recommendations in their classroom,

> To be honest, I don't think that people know enough about the strategies to use them. It is something that requires more planning and more work, but it's not difficult to implement in the classroom and it helps with the flow. I feel like it's a little bit of a shock at first and you can get overwhelmed, but they're doable and they work.

The findings discussed in this chapter underscore a strong commitment and desire by classroom teachers to overcome challenges of practicality in order to implement best classroom assessment practices with fidelity. Based on the results of the study, the

recommendations by measurement specialists are practical and can accurately enhance student learning, and ultimately achievement. However, in-depth training, unencumbered time, and experience implementing the formative assessment strategies are required.

Chapter 5: Discussion, Conclusions, and Recommendations

This study examined the current division between theory and practice over an effective method of evaluating and reporting students' academic achievement. The purpose of this chapter is to present a summary of findings, conclusions, and recommendations based on the data collected. In conducting this study, I was interested in examining teachers' perceptions of implementing recommendations by measurement specialists. Through observation and reflection in interviews, teachers shared their perceptions in terms of effective methods of evaluating and reporting students' academic achievement.

The theoretical framework that guided this study was based on the action research model of Kemmis and McTaggart (1988). The teachers developed a critically informed plan during training in the spring of 2014. Throughout the fall semester of 2014, the teachers executed their plan by implementing classroom assessment strategies recommended by measurement specialists. The teachers observed the effects of the action and during interviews teachers reflected on the results of employing specific recommendations by measurement specialists that were intended to (a) enhance the learning in the classroom, (b) provide supporting evidences that more accurately articulated student academic achievement, and (c) were practical classroom assessment practices.This chapter is organized by the four cycles discussed in Chapter Four: (a) learning targets; (b) rubrics; (c) feedback; (d) goal setting, self-assessment, and strategic

questioning. The teachers' observations of the effects of the action, and recommendations for practice and further research are discussed.

Cycle 1: Learning Targets

During the discussion on learning targets, all teachers noted that they had never received training on using learning targets, and therefore confused learning targets with curriculum standards or objectives. Teachers credited the training for clarifying the definition and for showing them how to properly use learning targets to guide the learning in classroom practice.

Support the learning in the classroom. The teachers agreed that when learning targets were stated clearly and used as a basis for assessing student work, learning was supported in the classroom and students were empowered to take ownership of their education. They concurred that learning targets helped to guide the lesson and kept both the teacher and students focused. Students were more actively engaged in the learning process because the learning target provided better focus on the curriculum standard, which helped students better understand what they were supposed to learn that day. Teachers agreed that students were more aware of where they were in the learning process, and what was needed of them to achieve their learning goal since they record the learning target daily.

Provide supporting evidences that accurately articulate student achievement. Teachers said that the learning targets helped students understand and monitor their own progress as well as opened communication between students and the teacher in each classroom. The study showed that when the students recorded their daily learning targets they were more able to track their learning progress throughout the semester. This

provided students and teachers with supporting evidences that articulated student achievement. In addition, evidences from formative assessment strategies, such as exit tickets, gave teachers information about student learning that allowed them to plan instruction and provide interventions when necessary. This process supports the idea that classroom assessment strategies are only effective if the information gleaned from the results supported next step instruction. Black and Wiliam (1998, 2003) and Popham (2008) reiterated this in their research, emphasizing that deriving data from the assessment and the way teachers and students use the information to inform instruction is as important as the assessment itself.

Practical classroom assessment practice. Addressing the question of practicality is important when proposing the implementation of any strategy in the classroom. However, for the purpose of this study, addressing the matter of practicality was essential because it was a key element to bridging the gap between theory and practice.

Teachers use learning targets as a basis for assessment to guide teaching, and as a guide for effective feedback, but they must remember that students are the intended audience. Therefore, to be effective, learning targets should be written in student-friendly terms. However, the teachers confessed that rephrasing learning targets in student-friendly language was a struggle. They understood the value of learning targets being in terms that are understandable and relatable to the students, but constructing learning targets differentiated for ability levels was difficult. Learning how to construct specific learning targets that guide the teaching and learning for each student with varying ability levels takes ongoing training and time. The concern among teachers was the practicality of being able to offer differentiated instruction that was guided by understandable and

relatable learning targets without compromising the learning for students. While the teachers admitted that the process of phrasing the learning target in student-friendly language was at times daunting, and they needed more training and practice, they concurred that the strategy was not only practical but essential to the learning process.

Cycle 2: Rubrics

The teachers had more personal exposure to rubrics than learning targets prior to this study; however, their familiarity was from having heard about them in their teacher training programs or from having been exposed to them as a student; but they all agreed that they had never been trained in the proper use of rubrics. As a means to evaluate student work, rubrics assess performance as far as what students do, make, say, or write. Hence, rather than a teacher judging the performance, rubrics allow the teacher, or observer, to describe the performance.

Support the learning in the classroom. Teachers reported that rubrics were helpful when used for assessments that may be subjective in nature. Since rubrics provided a standard format for assessing, they said assessments were more transparent for students and the format was helpful to assess student work quicker and more efficiently, and allowed for consistency in grading. Rubrics served dual purposes: instruction and assessment. As far as for the purpose of instruction, rubrics were used for feedback for learning, and, as an assessment, they were used as an evaluation and accountability measure. Furthermore, rubrics supported the learning in the classroom because they assessed student performance as indicators of the learning rather than as outcomes of the learning.

Provide supporting evidences that accurately articulate student achievement.

Even though rubrics are learning focused rather than grade focused, teachers reported that rubrics saved time when it came to grading. The teachers also reported that since rubrics were not about assignment requirements or counting things, rubrics allowed them to mark specific points of progress along a continuum, instead of grading student work with a "check" or "x" indicating right or wrong. Teachers admitted that this process also helped them to control potential teacher bias. In addition, they said that students were better able to self-assess and took ownership and responsibility for their learning. They all agreed that rubrics also provided evidence that justified an assigned performance grade. Furthermore, since rubrics were often times student-made and given out at the beginning of a specific task, students knew from the beginning what was expected of them and were self-directed on what they needed to learn to be successful. Hence, rubrics encouraged students to set learning goals and strive to achieve their goals. Rubrics were also reported as taking away the "guessing game." The questions of "What do I need to do to get an A?" Or, "What do I need to do to pass?" were all answered by the rubric that outlined the performance indicators and criteria. According to the teachers, this process reduced teacher bias and assured students equality in grading because expectations were uniform. Lastly, teachers discussed how rubrics provided students and teachers a visual representation of the level of achievement per the criteria listed. The teachers reported that data from the rubric opened up communication between student and teacher allowing them to discuss academic strengths and weaknesses with the students, and together formulate a plan going forward in the learning process. Students were then able to

monitor their progress on specific criteria for a particular lesson or over a given period of time.

Practical classroom assessment practice. The teachers strongly supported the idea of rubrics as a practical classroom assessment practice with the exceptions of the time it took to construct a rubric in student-friendly terms. They expressed concern in how to differentiate based on student need and the practicality of constructing a rubric for daily assignments. However, their overall impression of rubrics was that they were versatile and practical because they could be as general or specific as needed based on the assignment.

Cycle 3: The Method and Content of Feedback that Feeds Forward

The teachers reported that their definition and use of feedback changed dramatically because of this study. The teachers said that prior to the training their view of feedback was limited to graded classwork and homework, asking recall questions to check students for understanding, and observing students' facial expression and interactions in the classroom to assess engagement; however, even though they used this assessment data to plan instruction and promote student learning, they admitted that their practice fell short of true feedback. All teachers acknowledged that effective feedback engaged the students in the learning process and helped to clarify for students and teacher what students know, as well as what they needed to learn in order to reach the learning target. Popham (2008) emphasized that the use of evidence collected by students and teachers to decide the next course of action, whether it was to remediate or advance students, was key to the learning process.

Support the learning in the classroom. The theme of student accountability emerged throughout the interviews concerning the effective use of feedback. Teachers recognized that students cannot take responsibility for their learning if they do not know what they are expected to learn, where they are in the learning process, and how they will know if they are being successful. The teachers acknowledged that their prior use of feedback did not support the learning in the classroom because it did not help students evaluate their work. Rather, they admitted that their feedback was limited and impersonal. However, the teachers said that throughout this project their feedback continued to improve to better support the learning in the classroom.

In discussing their implementation process, teachers explained that effective feedback is not simply issuing a grade, but rather is given during the learning process such as draft writing. They explained that they were careful not to give students answers to the problems or to provide such descriptive feedback that they rewrote papers for the student. They also expressed that feedback is corrective but it also allows students to take ownership of their work by making application of that feedback to their assignment. The teachers noted how they realized that providing students' ownership of their work kept the students in control of the learning process and reduced frustration and stress by both teacher and students, which in turn supported the learning in the classroom.

Provide supporting evidences that accurately articulate student achievement. The teachers spoke of how evidence obtained from feedback was an essential resource for them in adjusting and shaping their instruction to support the learning process. Because they used feedback evidence as scaffolding through assignments or draft writing, teachers hoped that students would recognize trends in their work. This strategy provided

students insight into their current learning status, and gave them hints, suggestions, or cues they could use to improve their learning, thereby allowing them to take ownership of their education.

Practical classroom assessment practice. The issue of practicality of feedback as a classroom assessment practice was centered on time — time needed to provide effective feedback and time needed to practice the assessment process. The teachers recognized the value of effective feedback as a critical component of classroom assessment, but they struggled with the balance of feedback that was encouraging but constructive, and was detailed but not overwhelming. Brookhart (2008) was used as a training resource that guided teachers through effective feedback strategies that illustrated types of feedback and their purpose, how to give effective feedback, and how to teach students to use feedback. Brookhart (2008) offered practical classroom assessment tools for all grade levels, as well as included content specific examples. However, the teachers shared that the ability to give detailed feedback that is effective took time to learn how to perform efficiently, aside from the time that it took to actually perform the task. Another issue was the time students and teachers needed to effectively analyze the work, provide feedback, and return the work for corrections. While they agreed that the process increased student achievement, they also acknowledged that they needed to assess students quickly in order to move on to the next learning target in order to cover the curriculum. However, with that said, the teachers concurred that with more experience implementing the strategy the issue of time decreases somewhat.

Cycle 4: Goal Setting, Self-Assessment, and Strategic Questioning

According to Wiliam (2011), research evidence showed that when students were more involved in their learning they became owners of their learning which produced extraordinary improvements in their achievement. The teachers agreed that the strategies in Cycle 4 gave students the opportunity to learn basic knowledge, skills, and strategies necessary to self-regulate their learning and reach their learning targets.

Support the learning in the classroom. Sadler (1983) reported that student learning increased when teachers made students part of the learning process. Goal setting, self-assessment, and strategic questioning were strategies that allowed students to take ownership in their education. Wiliam (2011) emphasized that engaging students as learning resources for themselves as well as their peers was a "stepping-stone to students becoming owners of their own learning" (pg. 144). The teachers echoed these ideas in their statements. While the teachers admitted that they struggled with the lack of time they had to fully implement these strategies, they agreed that the techniques supported the learning in the classroom. With careful planning and informed adjustments to their instruction, the teachers created a more engaging classroom where students took ownership of their learning.

Provide supporting evidences that accurately articulate student achievement. This concept of student ownership was a prevalent theme among teachers when talking about goal setting, self-assessment, and strategic questioning. With students being more involved in their learning, teachers felt that student awareness had increased and resulted in students gaining insight into their learning and on how to improve. This supported Wiliam's (2011) assertion that, "Only learners can create learning" (p. 145); however, the

teachers repeatedly voiced their frustration with those students who had the skill necessary to self-assess but that were unmotivated to apply those skills in the learning process. The teachers expressed that they taught their students the skills needed to set goals, self-assess, and ask strategic questions but were frustrated when only those who were motivated enough, or who cared enough about their grade, used the skills.

When students failed to learn, or failed to provide evidence of what they had learned, the tendency was to blame motivation. Either blame the teacher for not motivating the student, or blame the student for lack of self- motivation. The teachers acknowledged that they needed to continuously monitor students in this cycle because students would lose motivation and becoming frustrated if the goals they set were too lofty, or if they were too hard on themselves in self-assessing, or if they felt defeated by the strategic questioning. In addition, the teachers reported that monitoring was necessary as some students set less than challenging goals and assessed themselves well above their demonstrated ability. Hence, while the teachers acknowledged that this cycle provided supporting evidence of student achievement, the process was not an easy one for students or teachers because of the emotions involved in students' self-perception and self-efficacy; however, the teachers agreed that students developed and improved on these skills but it took time and consistency in classroom practice. With only a semester for teachers and students to navigate a new process of evaluating and teaching academic subjects, both stakeholders had to institute a new way of doing things that was foreign to one another. Perhaps, if the research-based methods employed in the study were implemented by both teachers and students in the earlier grades, over time students would gain a better understanding of the process and the rewards that can be garnered from

taking greater responsibility for their personal learning. Teachers and their students would be more motivated to implementing practices that require a greater amount of work.

Practical classroom assessment practice. From the onset, the question of practicality for this cycle was never an issue. The teachers fully supported implementing this practice in their classroom as they believed this cycle produced evidence of student achievement. However, even though the strategy was seen as practical, the teachers felt they needed more training in how to teach students how to apply the strategies.

The teachers asserted that they understood the stages of the self-assessment cycle as explained by Rolheiser and Ross (2001), but they had difficulty teaching students the stages in a way that they were able to transfer the instruction to practice. Acknowledging that this is the very definition of teaching, the teachers suggested that continuing the strategy past the life of the project would be of great benefit.

According to Rolheiser and Ross (2001), teacher and student involvement should recalibrate at each stage of the assessment cycle by providing less structure and direction, and more responsibility and freedom to students so that they can take greater ownership of their work. The teachers struggled in the first stage to use student-friendly terms to describe criteria. However, they felt the more accustomed they became to using the strategy, the easier it became to implement. In the second stage, the teachers showed students how to evaluate their work based on the criteria created by the learning target and rubric. The difficulty in this stage was overcoming the issues associated with motivation, self-confidence, and self-efficacy. However, here again the teachers asserted that the more time the teacher and students had to hone this skill the better the practice

became. The third stage was designed for teachers to provide feedback to students concerning how they applied the criteria to their work. This process required feedback that addressed how well students understood the learning on a continuum, not about whether an answer was right or wrong. Teacher feedback was the model for student feedback and served as a resource in helping students to initiate feedback themselves that justified their ratings. In addition, teachers said that feedback opened the communication between teacher and student about where the students were in the learning process. Again, practicality was not an issue but the need to have more in-depth, ongoing training and the time to implement the strategy to the point of it becoming routine in the classroom was imperative to the success of the strategy.

Key Findings and Implications

Black and Wiliam (1998; 2003) and Popham (2008) asserted that when teachers gave students ample opportunities to learn by improving the practice of assessment in the classroom, student achievement increased. But their question was 'how?' Asking, "For us, the question was therefore not 'Does it work?' but 'How do we get it to happen?'" (Black & Wiliam, 2003, p. 629). This question highlights the need to assess teacher training programs and the apparent lack of classroom assessment instruction they receive. In addition, there appears to be an assumption that teachers are exposed to pre-service or continuing education training that thoroughly addresses effective classroom assessments.

When formative assessment strategies, such as the ones in this study, were properly implemented, student learning was significantly impacted. Popham (2008) emphasized that formative assessment strategies were more about good instruction and less about testing, but an issue was that teachers and administrators held different views

regarding the purpose of assessments. Traditionally, assessments were used to determine performance grades as opposed to information used to inform the instruction for continued learning. Popham (2008) asserted that the focus on classroom assessment should be on the learning process rather than the performance grade. However, in order for this process to be successfully implemented in the classroom and result in performance grades that accurately articulate student achievement, the teachers must be intentional in formally assessing the learning progression through the lesson.

Teachers agreed with Popham (2008) that this process was a progression of sequences that connected learning targets, usually written as student-friendly "I can" statements that were supported by student goal setting, self-assessment, and other formative assessment strategies such as rubrics, and student and peer feedback. However, they acknowledged that their lack of formal training in pre-service education programs created challenges that could be better overcome with more in-depth, ongoing training that educated them on effective classroom assessment strategies. Teachers admitted that they had placed too much emphasis on grading as a function of evaluation, rather than focus on assessment for learning. They contended that the assessment strategies implemented in their classrooms through this study were powerful measures of student learning as they guided both teacher and students in the classroom, encouraged high order thinking skills and self-reflection for students and teachers, as well as fostered better communication in the classroom. In addition, while the implementation of these strategies presented several challenges, the challenges could be overcome with more in-depth, ongoing training and experience.

This research study addressed a unique perspective on a baffling issue that has plagued education for over a century. Through this inquiry, teachers were empowered to give their voice to the question "Why?" After one hundred years of research and a plethora of documented reports of recommended grading practices by measurement specialists, why do teachers persist in assigning grades based on unsound assessment practices? Through action research, teachers addressed whether the gap between theory and practice was due to a lack of training, as suggested by measurement specialists, or whether the recommended assessment practices were impractical for the realities of life in the classroom. This study and its findings revealed the importance of action research as an essential instrument for organizational change.

The organizational structure of action research was essential to this project as the cyclical nature of the process allowed the teachers to take ownership of the study. Given the opportunity to plan, implement, observe, document, and reflect, teachers were able to confront issues about improving their classroom assessment practices and were provided a platform to offer suggestions to overcome them. They became change agents; they built their own theories and tested them in real situations, and gave voice to their experience through reflective interviews; however, while the structure should not be understated, the critical component to the study was the four teachers. Without their trust, professionalism, open-mindedness, and love for students and teaching and learning, the attempt to close the gap between theory and practice would remain stagnant as it has for one hundred years. The success of this study was due to the willingness of the teachers to be open to implementing recommended research-based practices they had never learned.

The significance of the findings further supports previous research with regard to classroom assessment and the articulation of student achievement. Schools that use research-based formative assessments as recommended by measurement specialists assign classroom performance grades that more accurately articulate student achievement. Because this study was conducted in a school that is labeled "school in improvement," policy makers who are responsible for creating reform programs that address student achievement should examine the findings of this project and consider issues of time and training within the school year. Furthermore, this study supports the evidence that a collaborative effort in improving classroom assessments will enhance teaching and learning. Formative evaluative systems in the classroom, to be effective, require ample amounts of time in order for teachers and students to successfully implement an assessment system and way of learning that is negotiated. Because the nature of successful learning is grounded in the context of the learner as well as the school and community culture, state and federal policy makers should reconsider requiring schools to implement rigid top down reforms that all too often erode time for teaching in the classroom and do little to support the types of formative assessment considered in this study.

The lack of time is a typical challenge prevalent in most professions, and although one teacher mentioned her need for more planning time, the majority of the statements that expressed time as a challenge referenced more time needed to practice executing the strategies, making the practice a part of their classroom routine, and time to collaborate with colleagues where they can receive feedback on the effectiveness in their classroom. To that end, United States' schools still need to consider providing a greater

amount of time for teacher collaboration and staff development throughout the school year. Equally important, public schools and higher education must work collaboratively to develop and provide training that blends research and practice for teachers in the field.

Limitations of the Study

The most significant limitation of this study is the number of teachers. Although each teacher represented a different high school subject, generalizing the findings with only four teachers is limiting. In addition, the teaching experience for the teachers ranged from only two to four years; however, I have found that as a change agent leading an a education reform effort, using teachers who have not spent years being enmeshed in bad teaching habits and poor classroom practices is more effective. The generalization of the findings is limited due to the uniqueness of the population of the participating school. But, even though the school is a Kindergarten -12grade North Carolina charter school located on the campus of a home for children serving students in the custody of the Department of Social Services, this study has the potential to inform low income Title 1 schools whose population is transient and considered "at-risk."

Because I was researcher-participant and the principal of the participating school, the possibility exists that teachers were supportive of the assessment strategies because this study sought to evaluate whether the assessment strategies helped teachers to better articulate student achievement. Actions were taken to limit this reactivity by triangulating data, as well as sharing transcriptions with teachers so they could expand, clarify, correct, or retract statements. However, even though the process of member-checking was employed, a possibility still exists that the teachers embellished their work to influence how they were perceived in the study.

The duration of the study was also a limitation. The study was conducted over an 18 week period, or a school semester. Had the duration of the study included the full academic year, the perception of teachers concerning the need for more time to practice may have changed. However, with that said, to prolong an action research study that addressed the gap between theory and practice creates dissonance. I concur that the more time you have to implement new strategies or practices, the better the implementation process. A longer study would provide the teachers with more practice and training, but the essential questions of effectiveness and practicality of the assessment recommendations have been answered. Therefore, issues of more time for training and classroom practice that emerged from the study can be addressed when the study moves from theory to practice. In fact, a school-wide initiative is underway in the participating school based on the findings and suggestions of the teachers.

Practical Implications of the Study

The practical implications of this study are paramount to improving teaching and learning in the classroom. This study provided empirical evidence that when teachers are trained in the recommendations by measurement specialists, and work collaboratively to define a problem, analyze data, make recommendations, and implement evidence-based solutions, they can help bridge the gap between theory and practice. This study confirmed that classroom assessments, as recommended by measurement specialists, are effective and practical for the classroom. In addition, when these recommendations are implemented in the classroom, the learning environment is more focused, organized, student-driven, and the resulting performance grades are a more accurate articulation of student achievement.

Changing the way stakeholders look at assessment and accountability is critical to education reform. While grading schools and evaluating teachers based on growth in an Academic Performance Index have their place as accountability measures, there must be accountability for creating and sustaining an assessment system that drives instructional improvements to increase academic achievement. However, the issue that has plagued education for a century is the lack of collaboration between policy makers, experts, and teachers. Federal and state policymakers and experts in the field of assessment all too often have researched, developed, and mandated programs for the classroom without the active involvement of school administrators and teachers. Such a process only widens the gap between theory and practice. The farther decisions are made from the classroom about teaching and learning, the less likely the decisions are understood by teachers and implemented with fidelity (Schneider, 2014).

Implications for Further Research

This study showed that the lack of implementation of assessment practices recommended by measurement specialists outside of the classroom is not due to the recommendations being too impractical, but rather due to a lack of training and time. Providing teachers training in recommended assessment practices helped them to assign performance grades that were a true measure of academic achievement and that accurately and effectively communicated students' level of mastery to stakeholders. To close the gap between theory and practice, this study's results demonstrated the need for more in-depth training in effective classroom assessment strategies for teachers. The training should be given in pre-service teacher programs and continued to be supported by in-service professional development. This would expose pre-service teachers to

effective classroom assessment practices before entering the classroom, and would create an environment in which the students reap the benefits of improved teaching and learning that focus on achievement. To continue the training of teachers within schools, the school calendar may have to be extended to strategically provide unencumbered time for teachers to work together regularly throughout the school year on formative classroom assessment and instruction.

In addition, because this study did not determine causal relationships between the assessment practices and student efficacy, additional research could carry the study past the practicality of the assessments and determine the impact these practices have on student self-efficacy, and expand the connection of self-efficacy through the practices to improved student achievement. Therefore, merely formulating a training model for classroom assessment is insufficient. Schneider (2014) suggested that "If educational scholarship is to overcome the barriers keeping it out of K-12 classrooms, it must possess a core of crucial characteristics that compensate for the lack of a research-to-practice pathway" (p. 7). Schneider puts forth four attributes that a scholarly idea must possess in a robust way "if teachers are to notice, accept, use, and share it" (p. 7). They include (a) perceived significance, (b) philosophical compatibility, (c) occupational realism, and (d) transportability. Hence, the challenge for further research is not just to create more teacher training programs, but to create training models in such a way that the scholarship is "practice ready." Create models adaptable to the context of individual schools where student culture and abilities often differ widely. Write models for the realities of the classroom, and present to pre-service and in-service teachers, districts and schools according to the research-based attributes framed by Schneider (2014).

Epilogue

I began my journey as an adult learner in 2007 when I decided to go back to school to earn my master's degree, and then on to earn my doctorate. After 17 years of teaching, I became the student. My experience as the teacher becoming the student was critical to informing this study as well as forever changing my perception of teaching and learning in the classroom. Throughout this process what I discovered within myself, as well as others in the field of education and education practices, is the lack of humility needed to bring about true change.

The discussion of assessing students to improve teaching and learning in the classroom has been ongoing for over a century. Research studies from experts in the fields of education and measurement proclaiming the proper techniques for teaching, learning, and assessment are abundant. Theorists assert in books and articles what should be done in the classroom and then claim the teachers are not implementing the researched-based practices. Teachers claim to not having enough time to cover the curriculum needed for testing and accountability, and that classroom assessment practices are an ancillary practice that they do not have time to research or implement. While both sides have a valid argument, what is most disturbing to me, and what drives my passion as a principal is that students and their education are getting lost in the discussion.

I was that teacher who was comfortable with my classroom practices. *My* test scores were good. Note the emphasis on "my." Taking ownership of student test scores is

a common practice among teachers in the age of testing accountability. I developed a good rapport with students and was intentional in teaching them content knowledge as well as life skills such as accountability and responsibility. My assessment practices were comprehensive, since the content of my tests and assignments measured students' content knowledge, while turning the assignment in on time, properly labeled with the student's first and last name measured accountability and responsibility. However, I was humbled as a teacher when I became the student.

My interest in classroom assessment was prompted from an "aha" moment I experienced in my Master's program. As a teacher, I advocated for differentiated instruction, I was conscious of the students' various learning styles, and I intentionally implemented cross-curriculum instruction to meet students' interests. The fact is I quietly prided myself on my perceptive teaching ability. However, I never gave much thought to the importance of validity in assessment and the consequence of the assessment on student learning — until I became the student.

Although my style of teaching was flexible, my assessment practices were rigid. If students did not turn in an assignment, they would receive a zero. I gave no minimum grade if they did not do any work, as no minimum pay would be given if they did not show up for work in the workforce. When students would leave their name off the paper, they would lose points. I am a teacher, not a detective. I gave the test one time, and the resulting grade was the actual grade. No retakes and no curves. The students either knew the information asked on the test or they did not. Late work was permitted but points were deducted for each day the work was late. Because I wanted to instill responsibility

in the students, as well as increase their academic achievement, I felt confident in my assessment practices — until I became the student.

During my Master's program I was required to take a course in classroom assessment. I defended my assessment practices when the instructor challenged me by stating that the incorporation of behavior factors into assessment practices resulted in an invalid measure of academic achievement. I argued that there was more to school then academic learning, like accountability, responsibility, and work ethic. I was a teacher with 17 years of experience. I knew what I was doing and did not need a measurement specialist to tell me otherwise. Then it happened to me.

The instructor went out of town and directed the class to submit their projects online via email. To maintain my 4.0, I was meticulous in getting my work done to perfection and turning it in on time, if not early. I looked over my project and submitted it.

The project was not a paper that required a cover page. This is not an issue unless… *You forget to put your name on the paper*! The instructor had printed off the papers to take with him on his trip; since my name was not associated with the document any place other than through email, when he printed the work, there was no associating my paper back to me. Upon returning to class, the instructor was not so subtle in pointing out my oversight, and then he said, "What if I took points off your grade for not having your name on the paper and gave you a B?" I flushed, my 4.0 flashed before my eyes. I had never been more humbled and convicted by my lack of perspective as I was at that moment. What had my unreliable, rigid, invalid assessment practices done to impede success in my students? How many students did I negatively impact by my ignorance in

classroom assessment practices? It was at that moment that I humbled myself and sought fervently to affect change.

Informed by Glesne (2011), I realized that I view this topic from the personal lens, because it happened to me; the justice lens, because I was unjust in my assessment practices; and the caring lens, because I want educators to see the power of empowering students to take ownership of their education, rather than suppressing students through classroom assessment practices. Hence, one could surmise that my interest in this topic is not only founded on a perspective enlightened from a personal experience, but also from my belief that through this action research study I have gathered the necessary information to begin the process of affecting change in the school I am charged to lead. While I am very passionate about this topic, this study has taught me to be vigilant, rather than a vigilante. Collaboration and communication are critical to bridging the gap between theory and practice. The result is effective and efficient classroom assessment practices that encourage and enhance student self-efficacy, increased student self-confidence, and improved student achievement, thereby, empowering students to succeed — the main aim of my profession.

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Appendix A: IRB Approval

IRB Notice

IRB <irb@appstate.edu> 3/27/14

to austinch, olsongh

To: Cyndi Austin

CAMPUS MAIL

From: IRB Administration
Date: 3/27/2014
RE: Notice of IRB Exemption
Study #: 14-0219

Study Title: Exploring the Classroom Assessment Practices of Teachers and the Accurate Articulation of a Grade as it Relates to Student Academic Achievement

Exemption Category: (1) Normal Educational Practices and Settings This study involves minimal risk and meets the exemption category cited above. In accordance with 45 CFR 46.101(b) and University policy and procedures, the research activities described in the study materials are exempt from further IRB review.

Appendix B: Training Framework

The Issue: The complexity of the relationship between theory and practice in the classroom.
The Central Issue: The implementation of research-based assessment and grading practices recommended by measurement specialists in the classroom.
The Essential Question: How/Can classroom assessment and grading practices recommended by measurement specialist be implemented with fidelity in classroom practice, and produce measurable evidence that supports/shows/reflects student academic achievement in the grade.
The Strategy: Formative Assessment

Elements:

1. Shared learning targets
2. Feedback
3. Goal setting
4. Self-assessment
5. Strategic teacher questions
6. Student engagement in asking effective questions

The Process

1. Shared learning targets – students need to KNOW the destination of the lesson
    a. Written/spoken in student language – discuss meaning
    b. Telling, showing, discovering (questioning)
    c. Clearly communicate criteria for success
        i. Assignments or activities MUST embody the learning target (LT)
            1. How, what, why, feels/looks like when complete
        ii. Questioning
            1. Ask for student question concerning the LT
            2. Think-pair-share
                a. Going to learn
                b. Importance
                c. Previous lesson alignment
            3. KWL Chart
        iii. Rubrics
            1. student language
            2. specific descriptions
            3. time bound
            4. Provide examples for each level
        iv. Examples – compare and contrast

v. Exemplars – compare and contrast

2. Feedback (that feeds forward)
    a. Written. oral, or demonstrated
    b. Focused on academic work – work progress toward LT and aligned with rubric
    c. Given in form of a question that gives students autonomy over their work
    d. Positive statements about the work
    e. SUGGESTED ways to improve
    f. Methods
        i. Timing
        ii. Amount
        iii. Mode
        iv. Audience
    g. Content
        i. Focus on the work
        ii. Function – descriptive; evaluation/judgment
        iii. Comparison – criterion, norm, self
        iv. Valence – positive; negative
        v. Specificity
        vi. Tone – what will the student hear
3. Goal setting
    a. Where am I going?
    b. Where am I now?
    c. What strategy or strategies can help me get to where I need to go?
    d. Specific, challenging, attainable, and linked to the current classroom task
    e. 3 main phases
        i. Setting the goal
            1. Help students identify bite-sized chunks within the LT
            2. Time frame to learn the chunks
            3. What they will be asked to do/produce at the end of the timeframe to demonstrate their learning
            4. SMART
                a. Specific
                b. Measurable
                c. Attainable
                d. Results oriented/Relevant
                e. Time bound
        ii. Selecting the strategy – teacher guides and student selects
        iii. Assessing performance
            1. Assess the distance between where they are and where they want to be in order to decide the strategy to use next

2. Football analogy
3. Teacher strategies
    a. Use feedback that feeds forward
    b. Model goal setting
    c. Provide goal setting guides

4. Self-assessment
    a. Teacher should be skilled in interpreting student progress
    b. The process is cyclical – self-assess – set a goal
    c. Not meant to be graded
5. Strategic teacher questions
    a. Planned for – open – require responses that demonstrate student's ability to think beyond factual recall or paraphrasing content
    b. Help students harness the workings of their own mind – assess learning immediately and accessible to both teacher and student – prompts students to inspect their existing knowledge
    c. Use appropriate wait time to increase student accountability and the complexity of the response
6. Student engagement in asking effective questions

Resources

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Appendix C: Interview Guide

1. The construction, alignment and use of learning targets and rubrics
    a. How did your assessment practices change after the training on the construction, alignment and use of learning targets?
    b. How did the training help you construct, align, and use learning targets and rubrics in the classroom?
    c. What problems/concerns did you encounter when implementing the construction, alignment and use of learning targets in the classroom?
    d. Based on your experience, what suggestions do you have to improve the training in the construction, alignment and use of learning targets?
    e. Based on your experience, what suggestions do you have on how to best implement the construction, alignment and use of learning targets in the classroom?
    f. How do you believe that the construction, alignment and use of learning targets helped you to better articulate student achievement in the classroom?
2. The method and content of feedback that feeds forward
    a. How did your assessment practices change after the training on the method and content of feedback that feeds forward?
    b. How did the training help you to provide feedback that feeds forward?

c. What problems/concerns did you encounter when implementing the method and content of feedback that feeds forward?

d. Based on your experience, what suggestions do you have to improve the training on the method and content of feedback that feeds forward?

e. Based on your experience, what suggestions do you have on how to best implement the method and content of feedback that feeds forward in the classroom?

f. How do you believe that the method and content of feedback that feeds forward helped you to better articulate student achievement in the classroom?

3. Goal setting, self-assessment, and strategic questioning

    a. How did your assessment practices change after the training on goal setting, self-assessment, and strategic questioning?

    b. How did the training help you to teach students goal setting, self-assessment, and strategic questioning?

    c. What problems/concerns did you encounter when teaching students goal setting, self-assessment, and strategic questioning??

    d. Based on your experience, what suggestions do you have to improve the training on how to teach students goal setting, self-assessment, and strategic questioning?

    e. Based on your experience, what suggestions do you have on how to best teach students goal setting, self-assessment, and strategic questioning?

f. How do you believe that teaching students goal setting, self-assessment, and strategic questioning, helped you to better articulate student achievement in the classroom?

4. Overall experience

    a. How did your perception and/or practice of classroom assessment change as a result of your participation in this study?

    b. How did the factors that influence your grading practices change as a result of your participation in this study?

    c. How did the practice of incorporating non-academic factors in the assessment and grading process change for you as a result of your participation in this study?

    d. How did the students receive the new classroom strategies and ways of assessing? Did they see a difference in their learning? Why or why not?

Appendix D: Consent to Participate in Research

Information to Consider About this Research

I agree to participate in this research project, Exploring the Classroom Assessment Practices of Teachers and the Accurate Articulation of a Grade as it Relates to Student Academic Achievement, which examines the theory by measurement specialists concerning the effect of training on classroom assessment practices. I agree to be interviewed at Crossnore Academy on a weekly basis for approximately an hour over the nine week grading period (March – May 2014). I understand the interviews will be about classroom assessment practices. In addition, I will provide deidentified student work that includes my assignments, the learning target for that assignment, the feedback/rough drafts for that assignment and the assigned performance grade on the final assignment.

I understand that there are no foreseeable risks associated with my participation. I also know that this study may help educators learn how to assess classroom performance in order to assign a grade that accurately articulates student achievement.

I understand that the interviews will be audio recorded for references purposes when writing up the results. I understand that the audio recordings of my interview will be destroyed one year after the completion of the study.

I give Cyndi Austin ownership of the tapes, transcripts, recordings and/or photographs from the interviews she conducts with me and understand that tapes and transcripts will be kept in her possession. I understand that information or quotations from tapes and/or transcripts will be published following my review and approval. I understand I will not receive compensation for the interviews.

I understand that the interviews are voluntary and there are no consequences if I choose not to participate. I understand that there are no contingencies for employees who choose to participate or decline to participate in this project. There will be no adverse employment consequences as a result of an employee's participation in this study. I also understand that I do not have to answer any questions and can end the interview at any time with no consequences. In addition, I understand that because Cyndi Austin (PI) is my direct supervisor and is typically responsible for my summative evaluation at the end of the year, she will remove herself as the observer/evaluator in all respects and my performance evaluation will be conducted by another administrator.

If I have questions about this research project, I can call Dr. George Olson at (828) 262-4963 or the Appalachian Institutional Review Board Administrator at 828-262-2130 (M-

F), through email at irb@appstate.edu or at Appalachian State University, Office of Research and Sponsored Programs, IRB Administrator, Boone, NC 28608.

Appalachian State University's Institutional Review Board has determined this study to be exempt from IRB oversight.

☐ I have received the Letter of Agreement signed by Brett Loftis, CEO of The Crossnore School and Crossnore Academy Board of Directors Representative

_____

Participant's Name (PRINT) Date

By proceeding with the activities described above, I acknowledge that I have read and understand the research procedures outlined in this consent form, and voluntarily agree to participate in this research.

Appendix E: Letter of Agreement

March 25, 2014

To the Appalachian Institutional Review Board (IRB):

I am familiar with Cyndi Austin's research project entitled *Exploring the Classroom Assessment Practices of Teachers and the Accurate Articulation of a Grade as it Relates to Student Academic Achievement*. I understand the involvement of Crossnore Academy employees is to receive training in researched based classroom assessment practices that use clearly articulated learning targets, rubrics, and high order questioning aligned to the Standard Course of Study. I also understand that the participants will be interviewed at Crossnore Academy on a weekly basis for approximately an hour over the nine week grading period (March – May 2014). In addition, I understand the participants will provide deidentified student work that includes the teacher's assignment, the learning target for that assignment, the feedback/rough drafts for that assignment and the assigned performance grade on the final assignment.

As the Principal of Crossnore Academy, serving as Principal Investigator, conducts this research project, I understand and agree that:

- This research will be carried out following sound ethical principles and that it has been approved by the IRB at Appalachian State University.
- Employee participation in this project is strictly voluntary and not a condition of employment at Crossnore Academy. There are no contingencies for employees who choose to participate or decline to participate in this project. There will be no adverse employment consequences as a result of an employee's participation in this study.
- To the extent confidentiality may be protected under State or Federal law, the data collected will remain confidential, as described in the protocol. The name of our agency or institution will not be reported in the results of the study.

Therefore, as a representative of Crossnore Academy, I agree Cyndi Austin's research project may be conducted at our agency/institution, and that Cyndi Austin may assure participants that they are permitted to voluntarily participate in the research activities described above, and provide responsive information without adverse employment consequences.

Sincerely,
Brett Loftis, Chief Executive Officer of The Crossnore School

Appendix F: Teacher Rubric for Written Projects

	Content	Organization	Written Language	Visuals
4	The thesis is clear. A large amount and variety of material and evidence support the thesis. All material is relevant. This material includes details. Information is accurate. Appropriate sources were consulted.	Information is clearly and explicitly related to the point(s) the material is intended to support. Information is organized in a logical manner and is presented concisely. Flow is good. Introductions, transitions, and other connecting material take the listener/reader along.	There are few errors of grammar and usage; any minor errors do not interfere with meaning. Language style and word choice are highly effective and enhance meaning. Style and word choice are appropriate to the project.	Graphics, props, constructions, or multimedia successfully fulfills the purpose of the assignment. Material is clearly connected to the points to be made. Points would not have been as clearly made without the materials. Use of materials is varied and appropriate. Use of materials is original and captures the audience's or reader's attention.
3	The thesis is clear. An adequate amount of material and evidence supports the thesis. Most material is relevant. This material includes details. Information is mostly accurate; any inaccuracies are minor and do not interfere with the points made. Appropriate sources were consulted.	Information is clearly related to the point(s) the material is intended to support, although not all connections may be explained. Information is organized in a logical manner. Flow is adequate. Introductions, transitions, and other connecting material take the listener/reader along for the most part. Any abrupt transitions do not interfere with intended meaning.	Some errors of grammar and usage are present; errors do not interfere with meaning. Language style and word choice are for the most part effective and appropriate to the project.	Graphics, props, constructions, or multimedia fulfills the purpose of the assignment. Material illustrates the points to be made. Use of materials is varied and appropriate. Use of materials is somewhat original.

2	The thesis may be somewhat unclear. Some material and evidence support the thesis. Some of the material is relevant, and some is not. Details are lacking. Information may include some inaccuracies. At least some sources are appropriate.	Some of the information is related to the point(s) the material is intended to support, but connections are not explained. Information is not entirely organized in a logical manner, although some structure is apparent. Flow is choppy. Introductions, transitions, and other connecting material may be lacking or unsuccessful.	Major errors of grammar and usage begin to interfere with meaning. Language style and word choice are simple, land, or otherwise not very effective or not entirely appropriate.	Graphics, props, constructions, or multimedia are not entirely connected to the purpose of the assignment. Not all material illustrates the points to be made. Use of materials is appropriate but lacks originality.
1	The thesis is not clear. Much of the material may be irrelevant to the overall topic or inaccurate. Details are lacking. Appropriate sources were not consulted.	Information is not related to the point(s) the material is intended to support. Information is not organized in a logical manner. Material does not flow. Information is presented as a sequence of unrelated material.	Major errors of grammar and usage make meaning unclear. Language style and word choice are ineffective and/or inappropriate.	Graphics, props, constructions, or multimedia are not connected to the purpose of the assignment. Material does not illustrate the points to be made (or there are no points made). Materials are not relevant, appropriate, or original.

(Brookhart, 2008, p. 63)

Appendix G: Kid-Friendly Rubric for Written Projects

	CONTENT	ORGANIZATION	WRITTEN LANGUAGE	VISUALS
4	I make a good point and support it well.	Logical. Organized. Flows.	Reads smooth	Cool graphics make my point.
3	I make a good point and sort of support it.	Logical, but not all explained. Organized. Some flow.	Reads OK	Good graphics make my point.
2	Point is not so clear, and some info is wrong or missing.	Some logic. Some organization. Choppy flow.	Hard to read	OK graphics, not all to the point.
1	No point, bad info.	No logical relation to the point. Little organization. No flow.	Can't read	Graphics not good or not related to the point.

Appendix H: Teacher-Made Social Studies Rubric

CATEGORY	**4**	**3**	**2**	**1**	**Score**
Quality of Information	Information clearly relates to the main topic. It includes several supporting details and/or examples.	Information clearly relates to the main topic. It provides 1-2 supporting details and/or examples.	Information clearly relates to the main topic. No details and/or examples are given.	Information has little or nothing to do with the main topic.	
Sources	All sources (information and graphics) are accurately documented in the desired format.	All sources (information and graphics) are accurately documented, but a few are not in the desired format.	All sources (information and graphics) are accurately documented, but many are not in the desired format.	Some sources are not accurately documented.	
Mechanics	No grammatical, spelling or punctuation errors.	Almost no grammatical, spelling or punctuation errors	A few grammatical, spelling, or punctuation errors.	Many grammatical, spelling, or punctuation errors.	
Paragraph Construction	All paragraphs include introductory sentence, explanations or details, and concluding sentence.	Most paragraphs include introductory sentence, explanations or details, and concluding sentence.	Paragraphs included related information but were typically not constructed well.	Paragraphing structure was not clear and sentences were not typically related within the paragraphs.	

Internet Use	Successfully uses online research resources to find information and navigates within these sites easily without assistance.	Usually able to use online resources to find information and navigates within these sites easily without assistance.	Occasionally able to use online resources to find information and navigates within these sites easily without assistance.	Needs assistance or supervision to use online resources and/or to navigate within these sites.	
Diagrams & Illustrations	Diagrams and illustrations are neat, accurate and add to the reader\'s understanding of the topic.	Diagrams and illustrations are accurate and add to the reader\'s understanding of the topic.	Diagrams and illustrations are neat and accurate and sometimes add to the reader\'s understanding of the topic.	Diagrams and illustrations are not accurate OR do not add to the reader\'s understanding of the topic.	
Structure	Organizational structure establishes relationship between/among ideas/events.	Organizational structure establishes relationships between ideas/events, although minor lapses may be present.	Organizational structure establishes some relationship between/among some of the ideas/events. The structure is minimally complete.	Organizational structure does not establish connection between/among ideas/events. The overall structure is incomplete or confusing.	
Organization	Organization is a logical progression of ideas/events and is unified and complete.	There is a logical progression of ideas/events and is reasonably complete, although minor lapses may be present.	One or more major lapses in the logical progression of ideas/events is evident.	Ideas/events are presented in a random fashion.	
Vocabulary	Exhibits skillful use of	Exhibits reasonable use of	Exhibits minimal use of	Lacks use of	

	vocabulary that is precise and purposeful.	vocabulary that is precise and purposeful.	vocabulary that is precise and purposeful.	vocabulary that is precise and purposeful	

Vita

Cyndi Austin has 25 years experience serving students in the North Carolina public school system. As a high school social studies teacher, Dr. Austin taught for ten years in the traditional public school system before accepting a teaching position in one of North Carolina's first public charter schools, where she taught for seven years. After receiving her Master of Arts degree from Appalachian State University, she accepted the position of principal at the charter school. Since assuming the role of principal, Dr. Austin secured a $900,000 grant for the school. She applied and received a ten year charter renewal, and successfully led the school to be reaccredited through AdvancED. In addition, she helped facilitate the construction of a new high school that was made possible by a 1.3 million dollar donation.

Dr. Austin earned the Ed.D in educational leadership with a superintendent license at Appalachian State University. In addition to her Ed.D, M.A. and B.S. degrees, she holds a middle school and high school teaching license in social studies, a school administrator license, and a curriculum and instruction specialist license, all from Appalachian State University